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VOLUME 43 1984

THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

BRIT. MUS. (N.H.) ENTOMOLOGY LIBRARY

EDITOR:
BRIAN O. C. GARDINER, F.L.S.

Index Compiled by
PAUL SOKOLOFF, M.Sc., M.I.Biol., F.R.E.S.

The Amateur Entomologists' Society
355 Hounslow Road, Hanworth, Feltham, Middlesex

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THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

EDITED BY

BRIAN O. C. GARDINER

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(Founded in 1935)

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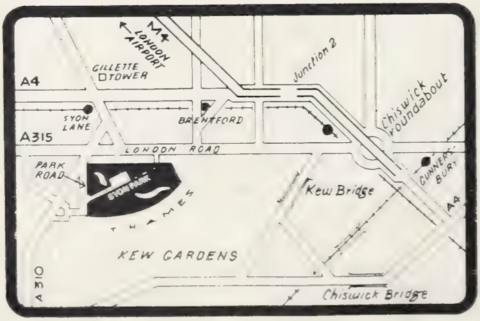

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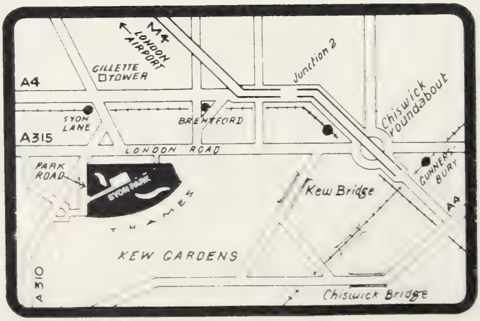

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AES
BULLETIN
No. 342

EDITORIAL

In this issue members will notice a slight change of style. Instead of the former NOTES AND OBSERVATIONS section of the Bulletin, which used to be printed as a continuous text, often of several pages, we now have a number of short notes, observations, or just news items, which are used as fillers between the long articles which in future will mostly commence at the top of a page. We hope that this will improve the general layout of the Bulletin.

We publish in this issue an account of a campaign to save a famous and important wildlife area known as Borstal Marsh, near Rochester, Kent. Sadly this tale of the sheer ignorance of politicians and legislators of the importance of such areas and the need and desire of many people to enjoy them *as they are* is proven by numerous other instances of a similar nature. In view of the statements of some politicians (see below) it is difficult to know if they are truly as ignorant of the true facts and of the wishes of existing users or whether they are really pushing the desires of the usually very wealthy lobby who has whispered a word in their ear. There is little doubt that the Building, Yachting and Golfing fraternity are immensely rich and powerful and have great influence in the corridors of power.

The sequence of events related in the Borstal Marsh article is very similar to that of the Crumbles, near Eastbourne, which was apparently described by the local MP as '. . . a barren, featureless land . . .'. This fine entomological area, already partly built over, is desired as a Marina and Golf driving range. Even more appalling, however, is the case in California where, as a result apparently of pressure from builders, legally protected butterflies (it was *illegal* under existing law, to kill or capture them, even accidentally and, even more important, it was forbidden *to destroy their habitat*) are to be bulldozed out of existence by the simple process of legislating a loophole into the protection act so that it now permits destruction of the habitat during 'lawful development' which of course becomes lawful if some planner says yes. If the legislators can be persuaded to change the law by the building fraternity then what chance have the planners of holding out against them?

EDITOR'S CHANGE OF ADDRESS

Will all members please note that the editor has now left the Department of Zoology at Cambridge and in future all communications should be sent to his home address, 18 Chesterton Hall Crescent, Cambridge CB4 1AP.

SOCIETY NOTICE

On our inside front cover are listed the names and addresses of the Officers of the Society *together with their function*. Would all members please note when writing upon a Society matter to send their letter to the appropriate Officer. Letters sent to the wrong person not only consume that person's time but also add to the costs of running the Society in the extra postage incurred in forwarding. Delay in the missive reaching the right quarter is of course also inevitable. It is also worth drawing attention again to the request that letters requiring a reply be accompanied by a stamped return envelope.

OUR HYMENOPTERIST'S HANDBOOK

It is just over forty years since the publication of this popular handbook which has already been reprinted. Demand continues to be steady but stocks are running low. After forty years a revision is badly needed and council appeals to a keen Hymenopterist to undertake this task.

Since this is a multi-author work there is perhaps rather more co-ordinating than solid re-writing to be done, although if anyone feels up to that task please stand up and be counted. Offers, please, to Peter Cribb, address on front cover.

ANNUAL EXHIBITION, SATURDAY 8 OCTOBER 1983

This was our third year at Hounslow Civic Centre and as successful as ever. Space to move or sit, ample parking, good refreshments and easy access made life easy for everyone, not least our country Members. But the main attraction, as always, was the opportunity of meeting fellow enthusiasts, showing current activities, discussing plans for next season and replenishing stocks from the many dealers present. From my vantage point at the entrance to the halls, it was enjoyable to welcome many generations of AES Members, some who were running the Society 40 years ago; others who had joined us recently.

We were pleased that most of our regular supporters showed their season's work but more new faces would have been welcome. Our disappointment was the lack of support for the Ansorge Award which provides certificates and generous cash prizes for exhibits entered by Junior Members. There was only one entrant, a first class project by Simon Reavey, which received the award. We emphasise that the age of the exhibitor is taken into account by the judges so that younger members are not at any disadvantage.

Our special feature was the rearing and reeling of unique English silk by the Lullingstone Silk Farm (Worldwide Butterflies). The demonstration showed how the eggs were incubated in spring and, due to domestication, the larvae do not stray neither do the moths fly, thus enabling the livestock to be displayed on open trays. The cocoons were boiled to loosen the gum when each cocoon produces 2/3 miles of silk in 1000 yard lengths or more. On the Filature, 7/8 threads were passed through a nozzle to produce some 20 denier raw silk which was wound on to a hank. Finally this will be sent to the Throwsters who twist and double the thread into yarn for commercial use.

The Council thanks warmly Colin Hart, the Organiser, ably assisted by the usual team of Peter Cribb, Sid Painter, Rob Dyke, Eric Bradford, Peter Taylor, Reg Fry and many other members and also the Managers and Staff of the Centre for their ready co-operation. Finally we record our appreciation to the Members who made generous donations to the Wants & Exchanges stall, John Knight — equipment, Mrs Beer and Brian Gardiner — livestock.

Associate Groups with specialized presentations were:—

A.E.S. Conservation Committee. David Lonsdale set up the 'Ditchling Story', the struggle to preserve this unique area from the inroads of vested interests.

A.E.S. Exotic Entomology Group. A wide range of exotic insects showing the scope of the flourishing Group.

A.E.S. Insect Behaviour & Ant Study Group. A live display illustrating the breeding and observation of British species of ants.

British Butterfly Conservation Society. Details of projects and surveys for species in particular danger.

Ludlow Museum. The Shropshire Biological Centre provided a reference collection of insects, news sheets and old entomological records.

Herts & Middlesex Trust for Nature Conservation. Publications and details of current activities.

British Arachnological Society. An exhibit designed to encourage the study of spiders.

British Entomological and Natural History Society. Historical photographs and papers from their collection.

Phasmid Study Group. Experiments with Stick Insects which are widely bred in this Country though no species occur here normally, most coming from the Orient.

Short descriptions of exhibits were received from:—

BRETHERTON R. F. (4320). 26 species of Lycaenidae and 18 other species of butterflies, especially *K. climene* Esp. from North Greece. Distribution maps of three recent large immigrations to the British Isles, *V. cardui* L. 1980, *D. plexippus* L. 1981 and *P. ni* Hubn. 1982.

CASSIDY, S/Ldr. A. C. (7385). Lycaenidae from Brunei, Borneo including three species of the little known genus, *Devanus* Dist., including new first records for Borneo. Series of the genus *Jamideo* Hubn. showing the distinct sexual dimorphism and the range of interspecific variation. A large collection of Hairstreaks (*Theclinae*), including the long tailed species, *N. amvita* Felder.

CRIBB, P. W. (2270). 119 species of butterflies taken in North Greece, July 1983, notably *E. charlonia* Freyer and *K. climene* Esp., the latter recorded once before from Greece as a single specimen. *Z. cerisyi* ssp. *ferdinandi* from Mt. Falkron, N. Greece and ssp. *cretica* from Crete, indicating the disparity in size. Also the False Apollo butterfly (*A. apollinus* Herbst.) bred from larvae collected near Troy by P. J. Cribb.

GOSSLING, N. (5169) & *ORPIN, C.* (5736). A comprehensive display of photographs, maps and specimens of butterflies found in the Algarve, S. Portugal, during April, 1983.

HILLIARD, R. D. (99). A further selection of moths bred from Poplar and Willow in the parks and open spaces of N. W. London. Included was the Sallow Kitten (*H. furcula* Clerck) which produced a full second brood in 1983 and is now much commoner in this district than its larger relative, the Puss Moth (*C. vinula* L.).

HODGE, P. J. (5335). Rare and interesting coleoptera and heteroptera noted in 1983. Among the beetles, *D. ernesti*, *Q. maurus*, *H. denticollis* and *A. intermedium*, all new to Sussex and *A. sexpunctatium* also new to W. Sussex. Rare species from S. Wales, Essex and Gloucester. Among the ‘true bugs’, *B. hirticornis* from Essex. Formerly recorded only from S. Devon, it has now been detected in most of the southern coastal Counties. Also *B. parvicornis*, new to Sussex.

JAMES, R. J., B.Sc. Bred speciments of the Clouded Yellow butterfly (*C. crocea* Geof.) showing the wide variation and of the Wood White variety, *L. sinapis* ab. *brunneomaculata*, spring and summer forms.

LE PARD, G. F. (4162). Examples of the Clap Net, known as the Batfowler which was the standard net used by 18th and 19th century collectors. Photographs showing its operation in the field.

MACNULTY, Dr B. J. (4528). Some of the more interesting moths from the Gower Peninsula (Swansea district) including the Scallop Shell (*R. undulata* L.) and the Portland Moth (*A. praecox* L.).

McCORMICK, R. F. and *PENNEY, C. C.* (3680). Type specimens of lepidoptera bred from ova with photographs of the larvae by R. F. McCormick. Butterflies included the Brown Hairstreak (*T. betuale* L.) and Duke of Burgundy Fritillary (*H. lucina* L.). Among the 23 species of moths were, Balsam Carpet (*X. biriviata* Borkh.), White Banded Carpet (*S. luctata* DeS.), Small Chocolate Tip (*C. pigra* Hufn.), Blair's Shoulder Knot (*L. leautieri* Bour.) and Buttoned Snout (*H. rostralis* L.).

PATEL, S. J. (751). Collections of Hawk-moths (Sphingidae) from N. Queensland, Australia (sent by D. A. Johnston of Cairns, Queensland) and from Hawaii and Papua, New Guinea (sent by Fr. J. C. E. Riotte of Honolulu, Hawaii).

PHILLIPS, M. (7700). Details of 19 species of butterfly which breed regularly in the gravel workings at Radlett, Herts and in 1983, three more species noted, Speckled Wood (*P. aegeria* L.), Holly Blue (*C. argiolus* L.) and Clouded Yellow (*C. crocea* Geof.).

PICKLES, A. J. & C. T. (5225). Lepidoptera taken or bred in 1983 especially from the Burren, County Clare, during a spring trip: typical English forms were included for comparison. Among the moths, Latticed Heath (*S. clathrata* L. ssp. *hugginsi* Baynes), Ingrailed Clay (*D. mendica* Cl. form *rustica* Hb.), Pod Lover (*H. perplexa* D & S ssp. *capsophila* Dup.), Transparent Burnet (*Z. purpularis* Brunn. ssp. *sabulosa* Trem.) and butterflies, Dingy Skipper (*E. tages* L. ssp. *baynesi* Huggins), Wood White (*L. sinapis* L. ssp. *juvernica* Will.), Brimstone (*G. rhamni* L. ssp. *gravesi* Huggins).

RAWLINS, A. C. (4857). Some 20 species of Malaysian hawk-moths (Sphingidae), collected in one night at the lights of a multi-storey car park in the Genting Highlands. Altitude was about 5,000 feet.

REAVEY, S. (6934 J.). A project titled 'A letter from America led to Nearctic/Palearctic studies'. A gift of butterflies from Oregon, U.S.A. suggested the striking resemblance to some of our British species although the localities are 6,000 miles apart. Two cases set out Oregon and British specimens together with explanatory notes and maps. **WINNER OF SIR ERIC ANSORGE JUNIOR AWARD.**

REVELS, R. (3942). A large display of coloured photographs showing the life histories of some British butterflies and other wild life from his British Wild Life and Countryside Photo Library.

SIMPSON, N. (4859). Aberrant forms of British butterflies including a fine melanic specimen of the White Admiral (*L. camilla* L. ab. *nigricans*).

SKINNER, B. F. (2470). Local lepidoptera taken and bred in 1983 in the British Isles. Included was a gynandromorph of the Orange moth (*A. prunaria* L.) and an almost white specimen of the Garden Tiger moth (*A. caja* L.).

SOLMAN, D. I. (4656). Photographs, specimens and drawings for a School project with the North London Polytechnic Urban species scheme. It involved work on the Dolichopodidae, a large family of true flies, small in size with metallic colouring and distinctive long legs. The flies are carnivorous and the aquatic larvae were water-trapped in Islington and Haringey, London.

SOKOLOFF, P. A. (4456). Selected species of micro-lepidoptera bred in 1983. Local macro-lepidoptera including all stages of the Vestal moth (*R. sacraria* L.) which was widely reported this year.

ST. IVO SCHOOL N.H.S. Our annual visit of Mr Berman and his members from this enthusiastic Society showing how creatures of many Orders can thrive in captivity.

TREMBATH, D. A. (3409). Details of a breeding project on the Vestal moth (*R. sacraria* L.) from specimens taken at light at Dorking, Surrey in late July.

R. D. Hilliard (99)

A NEW MEMBER'S OBSERVATIONS ON BUTTERFLIES

On Sunday July 17th my father took me and his friend to look for butterflies in a field near Biggin Hill, Kent. It was a sunny day, but quite windy. We saw Small and Large Skippers. I caught an Essex Skipper and my father boxed it when we could see the black on the underside of the antennae. Then we saw lots of Small Tortoiseshells, Ringlets, Meadow Browns and Cinnebar caterpillars feeding on ragwort. We had just seen several female Brimstones feeding when a butterfly flew past me and settled on the ground. I said to Dad, 'What's that?' He said 'it's another Brimstone'. I said 'but its got black markings on its wings, it must be a Pale Clouded Yellow.' Dad told me later he then thought it was a Large White. Because of my insistence he chased it across the field and managed to catch and box it. We took it to Ray Birchenough who told us it was the female variety of *helice* of the Clouded Yellow. Afterwards we took it back to the field and let it go. Last week, on holiday at Selsey, we saw 15 more Clouded Yellows. We watched females laying and we found a few eggs.

Chris Jupp (7802J)

BORSTAL MARSH CAMPAIGN

Mr McLean's first introduction to the campaign of Borstal Marsh, was in the weekly local paper, the Chatham News — his main source unless otherwise indicated. This was a couple of letters in the issue date June 4th, 1982 in reply to an article the week before. One letter expressed horror at the proposed 'ice-skating rink' on the marsh, the other was from a 'Proposed Developer' suggesting a marina — in addition to the Marina already occupying part of the Marsh.

On June 10th a public meeting was held at the Corn Exchange, Rochester, to discuss the plans to build an Olympic-sized ice-rink and sports complex on Borstal Marsh. The meeting was open to anyone interested in the Marsh, whether they lived in Borstal or not. Over 300 people attended, largely Borstal residents. Only one person spoke in favour of development, and that to extend the present Borstal Marina by 24 pontoon moorings. Objections raised at the meeting were:—

a) greater traffic congestion to already inadequate local roads.
b) wildlife would be destroyed.
c) one of the few river views in the Medway towns would be spoilt.

The result of the meeting was that residents were assured that opinions would be considered.

On July 5th the City Council approved the sports complex plans in principal as something 'we do want'. Quite who 'we' was is unclear.

By early July two things were apparent. First, the political opposition to the controlling City Council, the two independent councillors for Borstal, the Ward representative of the controlling City Council, the Borstal residents, and such conservation groups as had been involved to date, were opposing the City Council, who were showing signs of *not* considering public opinion, and interested developers. Second, the political campaigners for the controlling City Council, in the Borstal area, were expressing serious doubt that any candidate would be elected in the next election for the Controlling City Council in the Borstal area if the proposed development of Borstal Marsh went ahead; the controlling council leader believed the ice-rink would actually gain candidates in the Borstal area — he had obviously not paid a lot of attention to Borstal.

Ath the council meeting, on July 26th, at Chatham Town Hall — well attended by Borstal residents — a local resident obtained a High Court Injunction against the sports. The council, a few days later, announced intentions of selling the Marsh to anyone who would *build a sports complex*. This was before the Department of the Environment had made its position clear. Most of the conservation groups, that were to become involved, were now involved.

Seldom a week passed without at least one letter appearing in the Chatham News speaking out against the proposed development of the

Marsh. However, one letter, of early August, from a local resident, appealed to other residents to support the development of Borstal Marsh because they had been 'stunned into silence' by the 'loud and noisy' outcry to the development. One wonders why one person supported the development, therefore, at the public meeting of June 10th when things were still very quiet.

On August 4th, in the Evening Post (a local daily), a letter, from a local resident, appeared favouring the sports complex because the Marsh was apparently: a rubbish tip, unsafe, full of holes and smelly. In an effort to put the record straight, Mr McLean's published reply brought a phone call from the North Kent Wildlife Preservation Society, who also became very involved.

Mr McLean contact Mr Parsons to see if he would be interested in visiting the Marsh together with representatives from the North Kent Wildlife Preservation Society. This he did, thus the AES Insect Behaviour and Ants Study Group became involved.

On September 4th, 1982 Borstal residents and other group representatives met on Borstal Marsh. The site was a heaven for Botanists. Nearly every conceivable salt marsh plant was in abundance. Though rather late in the season many of the summer flowers were still in bloom. Most noticeable were two forms of Sea Aster. The mauve form, *Aster tripoliana*, and the yellow form *Aster tripoliana* var *disoides* covered approximately a third of the marsh. Salt Marsh shrimps were practically everywhere one trod. Pleasing observation of the day was a pair of *Anax imperator* dragonflies, *Volucella zonaria* (largest Hover fly in Great Britain) and many examples of microlepidoptera. Though the visit to the Marsh was late in the year one was still able to observe six species of Lepidoptera namely:—

Maniola jurtina; Vanessa atalanta; Vanessa cardui; Aglais urticae; Nymphalis io; Gonepteryx rhamni.

This visit brought to attention the fact that the marsh was highly habitated and worth as much effort as was required to bring the council to leave the marsh alone.

After the meeting Mr Parsons set about the task of writing a letter of objection to the sale and subsequent development of Borstal Marsh to those councillors whose addresses he knew, to test the response. Seven letters were sent: the result was one reply which was disappointing but strongly indicated to him that a very small percentage of the council appeared to *really want to sell* the Marsh.

In the Legal Notices of August 20th objections to the 'disposal' of Borstal Marsh were advised to be sent to the City Secretary by September 14th. On August 27th came news that a Public Inquiry was to be held. By September 3rd City Councillors had received 800 letters of protest; the

Department of the Environment eighty. On September 24th it was announced the Public Inquiry would start on November 30th and probably last about a week.

In late September a councillor was reported as saying that 5,000 Borstal residents had not complained about the proposed sale of Borstal Marsh. Two letters appeared on October 1st together informing the councillor that nor had 5,000 residents spoken in favour.

On October 8th it was reported that the Development Services Committee had *denied* planning permission for the 24 *pontoon moorings, on the grounds of the traffic increase,* proposed back in May.

On October 22nd the City Council was reported as putting aside £2,000 for the Public Inquiry — this supplied fuel for ammunition. Again on November 5th it was reported that the City Councillor for the Borstal Ward had been banned from holding office within the City Council; the fireworks over Medway for the next month were just the conventional kind. About this time a few pro-developers tried to play-off Borstal Marsh as a 'derelict dump' by comparing it to the issue blowing up over the Army's possible use of land at Luddesdown, Kent. Short measure was given.

A visit by Mr Eric Bradford on October 25th, 1982, made on behalf of the Amateur Entomologists' Society, was to make a general assessment of the insect habitats and to record any species of micro-Lepidoptera and butterflies which could be identified on this single visit.

The following list consists of microlepidoptera, with the exception of *Gonepteryx rhamni*, the Brimstone butterfly.

Stigmella viscerella Stn.	Mines common on elm
S. salicis Stn.	Mines on *Salix*, some still containing larvae
S. crataegella Klun.	Mines on hawthorn
S. hybnerella Hubn.	Mines on hawthorn
S. perpygmaella Doubl.	Mines on hawthorn
S. oxycacanthella Stn.	Mines with larvae on hawthorn
S. marginicolella Stn.	Mines on elm
S. plagicolella Stn.	Mines on blackthorn
S. speciosa Frey	Mines, some still with larvae, on sycamore
Stigmella spp.	Mines, some still with larvae on rose
Lyonetia clerkella L.	Mines on *Salix* and hawthorn
Phyllonorycter corylifoliella Hubn	Mines on hawthorn
Phyllonorycter spp.	Mines on *Salix*
Antispila pfeifferella Hubn	Mines on dogwood
Tischeria marginea Haw.	Mines on hawthorn
Parornix anglicella stt.	Mines on hawthorn
Caloptilia syringella F.	Mines on privet
Coleophora spp.	Cases on elm and hawthorn
Gonepteryx rhamni L.	One male flying across Marsh around 1.00pm

Mr Bradford points out that only a minute proportion of the insect fauna could be seen at this time of year, and hopes that further surveys can be carried out in Spring and Summer and with the use of such techniques as light trapping. The fact that he was able to identify so many micro-moths even under these circumstances, would suggest that other insects are well represented. The flora includes a good range of plants which provide good insect habitats, and there is also a dead wood habitat which includes several large tree stumps.

Attention is also drawn to the fact that the area includes a true saltmarsh, with a dominant stand of Sea Aster, and as such is of considerable ecological importance in a region where most marshes are either not saltmarshes or have been degraded.

In mid-November it was learned the Public Inquiry of November 30th had been postponed, at the request of the developing company or the City Council.

On December 10th it was reported that a call for a party to be formed to find alternative sites for the sports complex had been rejected by the controlling City Council.

On January 14th, 1983, the Lands and Assets Sub-Committee of the City Council had agreed to recommend the sale of Borstal Marsh.

At the council meeting of February 8th, a suggestion that Borstal Marsh should be used as a nature conservation park failed by two votes.

In various newspaper issues for 1983, it was learned that another site had been 'found' for the sports complex.

In early March came news that the applicants for the proposed sports complex had formally withdrawn their application, thus there would be no Public Inquiry. On March 4th, whilst pointing out that a point had been scored over the City Council, the Chatham News reported that the same developing firm, for the sports complex, now wanted to put forward plans for a Marina on Borstal Marsh.

N. McLean
142 Borstal Road, Rochester, Kent ME1 3BB

M. M. Parsons
Honorary Secretary
A.E.S.I.B.A.S.G.
95 Glebe Lane, Barming, Maidstone, Kent ME16 9BA

PROVINCIAL MUSEUMS & THE AMATEUR ENTOMOLOGIST A MUTUALLY BENEFICIAL PARTNERSHIP

Provincial Museums have something to offer all entomologists, from the five-year-old boy with a Puss moth caterpillar, to the keen local amateur and the professional researcher; all are equally important and all equally welcome. Many AES members will already have strong and hopefully fruitful associations with their local museums. We hope that this series might encourage more people to investigate the 'entomological delights' of their local institution.

There are over five and a half million insects stored in Great Britain's provincial musuems. (A Survey of Zoological & Botanical material in museums and other Institutions of Great Britain. E. G. Hancock, P. J. Morgan, 1981 B.C.G. Report Numer 1). They provide an important and sometimes under-utilized resource for the amateur entomologist. A large proportion of these collections reflect the past and present achievements of amateur entomologists and should be used by succeeding generations as a foundation for their work. The inclusion of a 'featured museum' section in the Bulletin should prove an admirable way of furthering this mutually beneficial partnership in terms of insect conservation, identification, taxonomy and ecology.

Merseyside County Museums, Liverpool, is keen to encourage more amateur entomologists in the north-west to visit, use and fully appreciate the collections in its control; it would like to take the opportunity to become the first museum so featured and to outline exactly what facilities are available for the amateur entomologist. It is intended that other museums in different parts of the country will follow with their own contributions.

FEATURED MUSEUM NUMBER ONE — MERSEYSIDE COUNTY MUSEUMS, LIVERPOOL

The Collections

The Entomological collections of the Merseyside County Museums are housed in the main building in William Brown Street, Liverpool and are looked after by two full-time members of the Department of Invertebrate Zoology. In total they number some 220,000 specimens divided into the following categories:—

1) British macro-lepidopera; 71,000 specimens.
2) British micro-lepidoptera; about 40,000 specimens.
3) Foreign lepidoptera; about 22,000 specimens, mostly butterflies.
4) British coleoptera; a collection of about 47,000 specimens with most British species represented.

5) Some 31,000 'other' British insects including diptera (25,000) with good cover for higher flies, odonata (420), orthoptera (500), trichoptera (2,000) and hemiptera (2,500). The remaining orders have a slightly more 'patchy coverage' and need adding to.
6) Foreign (non-lepidopterous) insects; about 4,000 exotic specimens particularly showy species.

Identification, research, display, teaching including conservation education, photography and book illustration are just some of the many uses made of the reference collections. Data rich specimens are used to provide much interesting information on the distribution of species, whilst the presence of a specimen in the collections acts as a 'voucher' to substantive published records. The collections are particularly useful for comparative purposes; for instance, it is far easier to identify a puzzling moth when you have a comprehensive collection showing individual species variation in front of you.

Facilities Available

The Department of Invertebrate Zoology has a large library of entomological books, specialist keys and journals (especially local journals). The visitor can be provided with study facilities which include a research desk, binocular microscope and supervised access to the collections. The staff are available to help with individual enquiries (when they can!) by providing information, advice and other local entomological contacts, it is also nice just to have a chat and swop notes.

The musuem also runs a Biological Field Data Bank for the North-West of England (supervised by the Botany Department) covering Cheshire, Lancashire, Greater Manchester and Merseyside. This is of considerable value in 'planning' work and can be consulted by anyone interested in the records, which are stored on a site basis (some of these are confidential). The museum is keen to receive any natural history records for the Data Bank especially entomological, as insects tend to be under-recorded compard to other groups.

Invitation to AES members in the North-West

We would be pleased to hear from, or be visited by any AES member with a specific entomological enquiry, identification problems, or who just wishes to have the stimulation of looking at the collections. Either write to the address below or telephone 051 207-0001 and make an appointment (unfortunately the Department is normally closed weekends).

We would also like to have an open day for the thirty or so AES members in the Merseyside region, this would have the duel function of showing the collections and bringing everybody together to talk and meet one another. If you would like to attend please contact the Museum and we will arrange a Saturday meeting.

Dr I. D. Wallace (5533) S. Judd

NEW BOOK NOTICE

The Butterflies & Larger Moths of Lincolnshire & S. Humberside by Joe Duddington and Rex Johnson

This long-awaited work by two expert members of the LNU is expected from the printers July 1983.

It contains brief introductions to the geology, flora, fauna and weather of Lincolnshire and the state of conservation of the habitats, all by 'guest' writers. The main body of the work by the two authors above lists the species which have occurred in the county, with an indication of their present status and of where they may be sought, with notes on their habits and the food plants of their larvae. The whole is supplied with an indexing system which is very easy to use both for English and Latin names. The book is expected to run to some 270 pages and to appear in the same format as the *Flora of Lincolnshire* and the *Geology of Lincolnshire.*Price £7.90 post free.

Obtainable from:— Mrs E. V. Pennell, 47 Ridge View Road, Bracebridge Heath, Lincoln LN4 2LH.

BOOK REVIEW

The Butterflies of Scandinavia in Nature by H. J. Henriksen and I. B. Kreutzer. Translated from the original Danish text by Elisabeth Folino. 4to. Cloth. pp. 215.

Published by Skandinavisk Bogforlag, Odense, Denmark. 1982. Price £50. Available from the author:—

H. J. Henriksen, Slaebaek Skov 7, 5771 Stenstrup, Denmark.

The British entomological periodicals carry a number of reports on Continental European butterflies and collecting trips, going far back to the earliest volumes. In particular this Society's Bulletin has a tradition of reporting the observation of butterflies, made all over central and souther Europe including the Mediterranean region. The great area of Scandinavia which represents our eastern neighbour is sadly lacking in all but a very few articles. The main books covering the lepidoptera of this region in detail, are almost all written in their native languages, and so are of limited use for the majority of British entomologists. The publication of this new work fills an important gap in the literature, in a most attractive form and is additionally useful as it is available with English text.

The authors have put together quite a comprehensive collection of observations, photographs and distribution maps covering the butterflies of this enormous region, from southern Denmark, Sweden and Norway to the North Cape. It is more than just a series of insect studies as the work includes habitat photographs. This point is perhaps one of the most refreshing and valuable aspects of the book.

Also covered in the text are descriptions of the species; geographical and individual variation; the early stages; a calendar; description of the habitat and habits and distribution, together with maps. A very fine set of photographs cover most of the life stages of the insects.

We have lost species from the British Isles that are still resident in Scandinavia at latitudes hundreds of miles north of their last known haunts here; the Black-veined white, the Mazarine blue with records extending almost to the North Cape of Norway; (did Glanvilles Wootton look like the habitat portrayed here?) the Chequered skipper, now probably only in Scotland, with a Scandinavian distribution from Southern Norway right up into Arctic Norway and Sweden.

Habitat photos for species now local in Britain are equally fascinating. Included are photographs of habitats, together with descriptions for such species as the Swallowtail, Heath fritillary and Black hairstreak. The habitat of the Heath fritillary is apparently quite different to that recorded in its few British haunts, and the terrain on which the Silver-spotted skipper flies is unlike the chalk-hill habitat associated with it here. Some of the habitat photographs seem odd in that they portray large areas of fjord or other unlikely terrain. The relevant foreground has taken second place to the beautiful scene. In fact many of the pictures would do justice to a travel brochure. What they don't show is the rain, mist and the midges that can swarm in these areas. In the foreword the authors explain that they have excluded these factors and left us with a record of 'the sunny days'. What a wealth of information is given in the single picture of the Arran brown's habitat in Norway bearing in mind the curious odd records from Scotland.

The book's contents are concise: a brief foreword; a map of Scandinavia, subdivided into landscape types; a list of species and the text subdivided to cover species desciption and other information needed to acquaint the lepidopterist with each butterfly. In fact, a good portable guide that anyone visiting the region would find most useful. This book would not only give ideas as to the areas to look at for various species but the illustrations of terrain offer a better clue than the dot on the distribution map.

Rather more information in the maps would have been ideal. A single dot may represent a single specimen or a colony. A map showing the recorded areas and unworked country or the density of records would have been most valuable to those who like to blaze new trails. I am inclined to think there are plenty of underworked sites all over northern Scandinavia.

Many of the colour plates are very fine photographs of the life cycles of the various species. They add up to one of the most attractive books on live butterflies. I understand that the work is published in a quite limited edition and may well become a scarce item before too long. It is published in Danish and English editions, in a cloth binding.

It is the result of many years of travelling, photography and patience. It would be possible to criticise some of the details, such as the lack of an illustration of the underside of a fritillary, or the slightly out of balance colour in a photograph, but these points are so easily clarified in other 'field guides', which are illustrated with set insects. The beauty of this work is the life, both insect and landscape, portrayed. Sadly some of the early life cycle stages are omitted, but no doubt the enthusiast can set out to fill in these gaps for himself.

Hopefully this work will encourage a new style of butterfly book, with a heavy emphasis on biotypes.

The main criticism will be levelled at the price of the book and this reflects a well known difference in the cost of books here and on the continent. Perhaps that too is an indication of things to come!

David Wilson (4764)

SOME OBSERVATIONS FROM SOUTH NOTTINGHAMSHIRE

Members may be interested in some recent captures at Cropwell Butler in South Nottinghamshire which I took last year.

On the night of October 1st I took a specimen very similar to *Methymna ferrago* (the Clay) in colouring but its forewings were more pointed. Closer examination showed it to be a perfect specimen of *M. unipuncta* (Haw) (White Speck or American Wainscot). The vague white line extending from the base of the forewing to the white spot in the reniform stigma and the dark oblique apical dash make it quite distinctive. According to the distribution map in John Heath's recent book this would appear to be the first record for the East Midlands.

During September I took two almost perfect specimens of *Rhodometra sacraria* L. (the Vestal) — the first on September 10th was the form with the maroon stripe and the second, on September 24th was ab. *labda* Cramer with the dark brown stripe.

I also recorded six specimens of *Rhyacia simulans* Hufnagel (Dotted Rustic), five between July 12th and July 26th and a worn example on September 15th.

In early August I saw two specimens of *Colias croceus* Fourcroy in my garden. Both were female and one was a var. *helice*.

M. E. Marchant (2598)

MIGRANTS IN KENT 1983

On answering a knock at the front door on the evening of September 21st I was confronted by a complete stranger wielding a plastic container. He had found a large moth early that morning sitting on a gas container by the side of Dover Road, Walmer, Kent, and as he had heard that I was interested in lepidoptera, thought that I might be able to identify it.

It proved to be a fresh female Convolvulus Hawk (*Herse convolvuli* L.) and when removed from its container, released a large amount of meconium all over me. I assume that it had only hatched the previous night, judging by past experience of breeding this species.

Two days later I received a telephone call from the local garden centre saying that they had been given a Convolvulus Hawk and would I like it. Of course, I couldn't believe my luck, so immediately rushed down to have a look. Sure enough, there was another Convolvulus Hawk sitting in a sweet jar. This turned out to be a fresh male. When handled this moth too, produced a large amount of meconium, so I can only assume that this also had probably emerged the night before. This moth was found by a schoolteacher on her car door trim in Coolinge Road, Folkestone, again early in the morning. This she took to the garden centre at Hythe as they have a living butterfly exhibition in one of their greenhouses, which I run in my spare time.

On the evening of the next day (September 24th) another specimen was reported feeding on tobacco plants in a Hythe garden, but evaded capture.

My M.V. trap which I run in my garden produced two males of the Vestal Moth (*Rhodometra sacraria*) on September 25th and 28th respectively.

Other sightings of interest this year are three Hummingbird Hawks and two Clouded Yellows, neither of which I have seen around Folkestone for at least twenty years! At Greatsone in August I saw two suspected Bath Whites on the same day, but was unable to confirm it as I didn't have my net with me. These were flying in front gardens of cottages on the beach, and as no Marbled Whites inhabit the area I can only assume that they were Bath Whites.

And as a footnote, a dying specimen of the Deaths Head Hawk *(Achevontia atropos)* was found in Dover, on a dustbin, in June and reported in the local paper.

So all in all I would say 1983 was an exceptional year for migrants in my part of Kent. Has it been so all over the country, or was I just lucky with all my sightings?

Tony Rouse (6572)

PRESS RELEASE

Insect Zoo at the Dolphin Centre

An MSC project has been set up in the Dolphin Art Centre in James Street, Bridgeton under the auspices of Poldrait Community Development, a local community business.

It is hoped that a permanent exhibition will be set up to attract school children and community groups, to view the centre's exhibits, which include an already established children's favourite in 'Tara' the tarantula.

The idea for the scheme originated with the Director of the Dolphin Art Centre, Mr Peter Scoles, who has already gained an international reputation with his children's circus.

It is expected that the zoo will be open to visitors within the next few months.

Any enquiries regarding the project should be made to:— The Organiser, Insect Zoo, Dolphin Art Centre, James Street, Bridgeton, Glasgow.

FURTHER COMMENTS ON THE COLOURING OF THE PUPAE OF *PAPILIO MACHAON* L.

With further reference to the note in the Bulletin (*Bull. amat. ent. Soc.* Vol. 42. p. 36) in regard to the pupal coloration of *P. machaon*, a recent article on the subject has appeared in the publication Sciences Nat (*Bulletin* No. 37 p. 15) written by Rene Debroucher in which he rejects my suggestion that the larvae are able to assess the background colour of the pupation site before commencing to pupate and that this affects the final colour of the pupa. In his experience the colour is in no way affected by the background. Of twenty-one pupae formed on a brownish background, there were three basic colours, bright green, clear buff and brownish with dark markings. In his opinion the eventual colour is controlled genetically and the larvae which are of one colour-form appear different to the others. He states that in his observations the larvae which are to produce the 'green' type of pupae are much greener in appearance with the black and red markings greatly reduced, whereas those which produce the 'brown' type of pupae are bluish-green with marked black and red bands and spots. Perhaps members would look for this difference in any larvae they are breeding and then note the colour of the subsequent pupae. Breeding from selected pupae of the same colour could establish what the genetic control is. If Mr Debroucher's observations are correct it might be possible that the larvae are selecting a background for pupation which will suit their ultimate pupal colour. When only one form of background is provided then there is only a 'Hobson's choice'.

P. W. Cribb (2270)

LIFE HISTORY OF *PAPILIO ANCHISIADES* (THE ORANGE DOG)

Ova of this species were obtained on a visit to the Butterfly House, Syon Park on June 5th, 1982., They had been laid on a lower leaf of a citrus bush, and were neatly laid in rows; the ova totalling twenty and being orange in colour. When I removed the leaf they were already showing the black mark in the middle of the semi-transparent ova, and so I assumed that hatching would commence in a day or two.

By June 14th, the ova had not, however, hatched, and since the leaf had completely dried up, I removed the ova into a plastic container. On the following day five larva had hatched out and so all were placed on a small *Choisya* plant and sleeved. Now was this coincidence or had the eggs deliberately not hatched due to the dried leaf?

The larva were a most strange sight, light caramel brown in colour, slimy in appearance, looking just like a leech or slug. By the end of the day all the eggs had hatched, and were placed on the same *Choisya*. By the following morning all the larva had congregated on to two adjoining leaves, huddled side by side down the centre of the leaf. I had purchased a fairly large *Skimmia japonica* and so once again transferred the larva.

The second instar produced the same type of 'slug-like' larva and still they stayed together. By the middle of July the larvae were now in their third instar, but now they changed to a dark grey colour with splashes of white on their back, resembling bird droppings on a twig. As the larvae were now becoming overcrowded, I obtained four more plants and gave them the freedom of the greenhouse. Within a few days the larvae were all congregating at the bottom of the foodplant and at about 4 pm they would separate and begin a rapid ascent of the foodplant, to feed at the top; to return by the following morning.

The final instar larvae were about 35-40 mm long; the first trying to form up near the roof of the greenhouse; however, by the following day, it had dried up; the same fate awaited two others. I increased the humidity and the first larva changed to its chrysalis successfully on August 3rd, on the bottom twig of a plant. The chrysalis was 26 mm long and resembled a broken twig. By August 5th four had formed up, and on the 8th two more.

However, on the 10th, two disappeared, and I assumed spiders had been at work. On the 12th a third disappeared and so I decided to remove all the pupa to the safety of a net cage. On August 28th the first butterfly emerged, a male, with a wingspan of approximately 80 mm, black in colour, with dark pink on the hindwing. On the 31st two more emerged, a male and female, both were similar in appearance. No pairings were seen and even though two more females emerged on September 2nd, this did nothing to encourage mating. By September 25th all had died and no ova could be found.

J. Green (4932)

THE SOTHEBY'S SALE

As advertised in the August Bulletin last year, Messrs Sotheby's duly auctioned the contents of the National Butterfly Museum (formerly Saruman Butterflies), a well-known trader at our annual exhibition. Your editor attended and thoroughly enjoyed the experience, even though most prices went quite out of his range. As usual auction fever set in as the following instances show.

1) Frohawk's 2-volume *Natural History of British Butterflies* apparently sold for £330, whereas it was on sale at our exhibition a few weeks earlier (and indeed in current booksellers catalogues) at half that price.
2) Fifty-five pounds was paid for two books currently available *new* at £50.
3) A single specimen of *Graellsia isabella* fetched £33. Price at our exhibition (and still I believe available) £9.50.

On the whole most of the books in the sale were in rather poor condition and the only bargains were the numerous volumes of Seitz' *Macrolepidoptera of the World* which all went for quite reasonable prices. Before attending the sale we had noted some current bookdealers prices and consulted Book Auction Records for a number of the lots and in many cases these were exceeded, often by a factor of two or three, as for instance Mosley's *Illustrations of British Lepidoptera* £154 in the auction, £75 recent catalogue. Moffett's *Theatre of Insects* £330, recent catalogue/auctions £75-150. Perhaps as a counter balance, Barrett's *Lepidoptera of the British Isles* at £528 was some £150 or more cheaper than recent prices, and Budgen's *Episodes of Insect Life* was a real snip at £33, being £96 currently in Cambridge.

The Insects, mostly butterflies, were really in first-class condition and their prices reflected this, many of the lots of single boxes, a dozen to a hundred specimens in each, running to several hundred pounds and very few indeed went for less than £30. What did surprise us rather was that the same high prices were being bid for indifferent lots of damaged and common material. Again we rather felt that auction fever was at work.

We understand that many of the lots especially those containing the rarer and type material were bought by the Allyn Museum of Entomology at Sarasota, Florida, so it will have gone to a good home.

The furniture and other effects were also sold and these too fetched good prices, such as £8,800 for a genuine Roman sarcophagus. The numerous insect cabinets, all modern, fetched the reasonable price of £18-£20 per drawer.

The account below is verbatim from Messrs Sotheby's press release. We have, however, omitted the furniture section. The photographs in illustration are also by them.

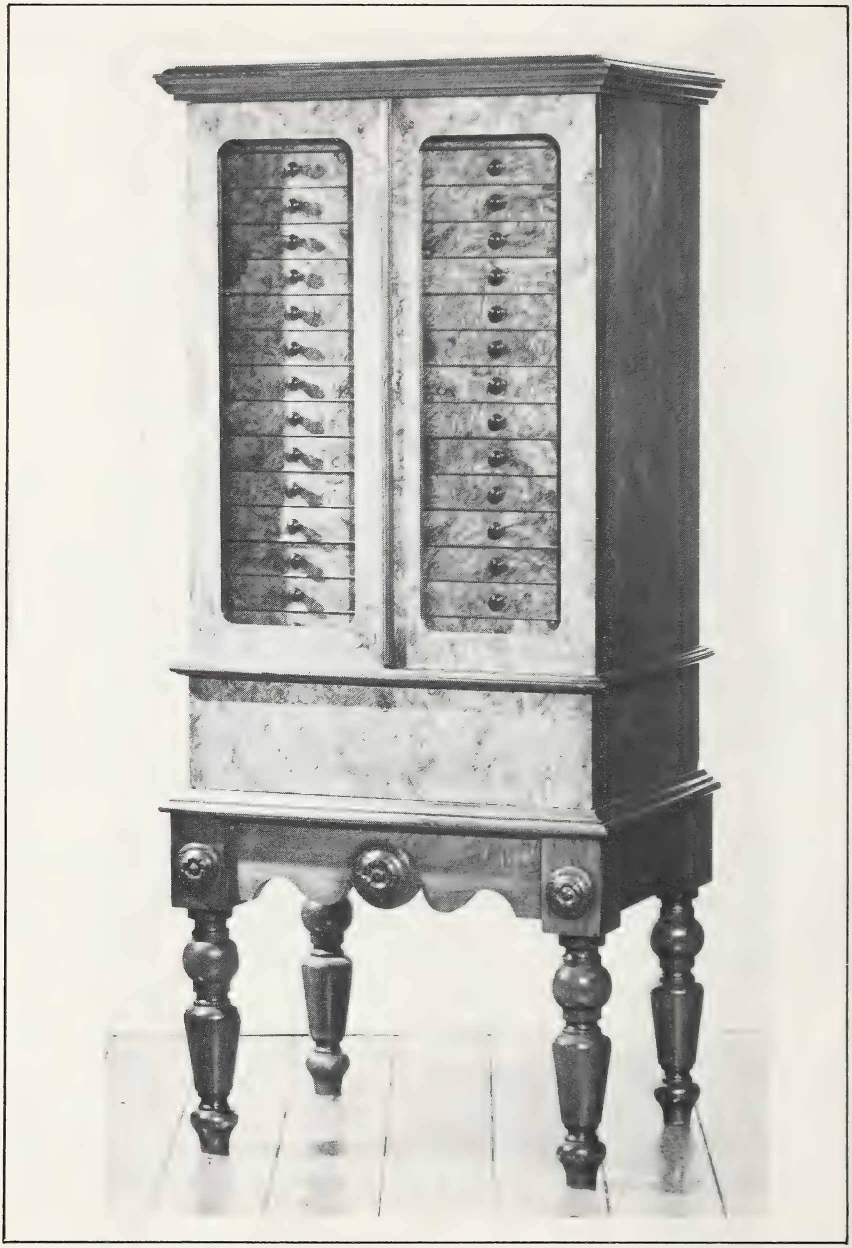


Fig. 1. The fine Victorian walnut specimen cabinet by Gurney, the drawers full of rare, extinct, and varieties of, British butterflies, assembled over many years by Paul Smart which sold for £10,450.

The excellent library at St Mary's, was devoted mainly to books on Lepidoptera and when auctioned *The Aurelian*, or *Natural History of English Insects, Namely Moths and Butterflies,* by Moses Harris, second edition, text in English and French, hand-coloured frontis, 45 hand-coloured plates, later half calf, marbled boards, 1778, was bought for £2,090. *The Natural History of British Insects* by E. Donovan in 10 volumes, bound as nine, first edition, first issue, hand-coloured engraved plates, half red Morocco, marbled boards, 1792-1801, made £1,540

Eleazar Albin's *A Natural History of English Insects*, first edition, first issue, the 100 copperplates coloured by hand and with wood-cut decorations, subscriber's list, later half-calf, marbled boards with an additional hand-coloured engraved frontis from Albin's *History of Spiders*, 1736, depicting inter alia the Author on Horseback, 1720, sold for £1,045.

The Papilions of Great Britain, by W. Lewin, title page and text in English and French, half title, 46 hand-coloured engraved plates, 1795, went for £638.

The small collection of stamps included a number of First Day cased presentation sets. These all featured First Day Covers plus examples of the actual butterflies, in glazed display cases with decorative mounts and made prices of between £24-£49 each set.

The second day's sale saw collectors and representatives from a number of well-known British and Overseas museums gathered together for the auction of approximately 450 lots of World Butterflies, British Butterflies and Moths, Tropical Insects and British Beetles.

A top price of £1,100 was realised for fifty-three British Extinct and Vagrant Butterflies, including large coppers, purple edged coppers and scarce swallow tails.

Three individual display collections each sold for £638 — 'Hillside and Heath' with races of *H. semele*, *P. argus*, aberrations of *L. bellargus*, *L. coridon*, etc; 'Hedgerow and Field' with a fine series of forms, *P. icarus*, *L. phlaeas*, *A. hyperantus*, etc; and 'Woodland' including *A. iris*, and good Theclinae and Argynninae with variations.

Among the British moths £770 was paid for Arctiidae, etc. A fine series of *S. lutea*. Historic *E. pulchella*, *L. dispar* including the last native British examples bred by Leeds; and an important series of *T. jacobeae* with a large number of *coneyi* forms. Five hundred and fifty pounds secured Arctiidae — Tigers. A long series with fine aberrations of *A. caja*, *A. villica*, *E. quadripunctaria*; and a very important series of *P. dominula* ex-Kettlewell with striking forms.

The Smart British Butterfly Collection of approximately two and a half thousand specimens, contained in a fine entomological cabinet in mahogany by T. Gurney, made circa 1900, sold to a private collector for £10,450. (See illustration Fig. 1).

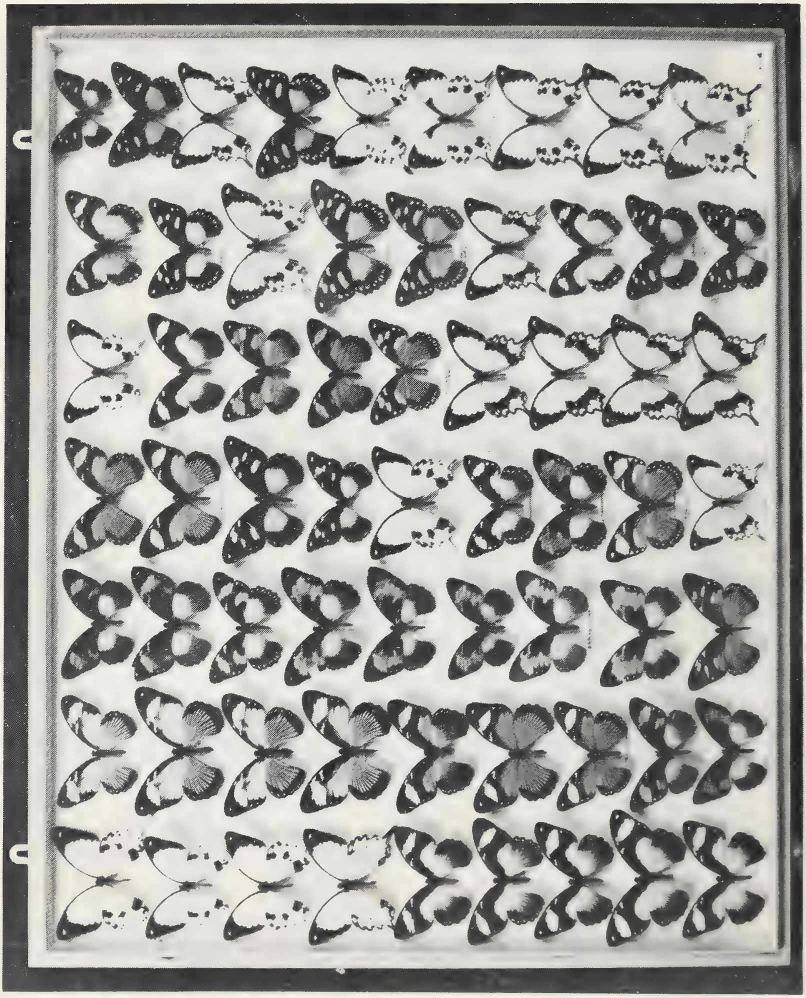


Fig. 2. The specimens of *Papilio dardanus* which realised £660. This species became world famous some years ago through the work of Sir Cyril Clarke, then President of the Royal College of Surgeons, whose researches into the genetics of this species provided the breakthrough in the treatment of Rhesus babies.

In the section for World Butterflies, one lot: *Papilio dardanus* races and forms, including many very rare, sold for £660. (See illustration Fig. 2). An interesting catalogue note accompanying this lot stated 'This amazing polymorphic species became world-famous some years ago through the work of Sir Cyril Clarke, then President of the Royal College of Surgeons, whose researches into the genetics of dardanus provided the breakthrough in the treatment of Rhesus babies. The collection includes one of Clarke's experimental specimens and is sold together with letters from Clarke to J. A. Burgess about *dardanus* and copies of several papers on the genetics of this butterfly by Clarke and his colleagues'.

A price of £418 was paid for Papilionidae. Papilio, mostly neotropical including *palamedes*, albino aberration of *torquatus*, *bachus*, *ascolius*, *homerus*, *scamander*, rare females of *androgeos* and *astyalus*, and many others.

Two butterflies in a glazed display case, *Morpho didius* Gynandromorphs — one symmetrically half male half female, the other a mosaic completely mixed on all four wings changed hands at £495.

MIGRANT NOTE

Clouded Yellows in Hampshire and Dorset — While on holiday at Lockerely, near Romsey, Hampshire during the first two weeks of August last year, my father and I were fortunate enough to come across several Clouded Yellows (*Colias croceus* Fourcroy) in a disused lane. The butterflies were feeding upon meadow knapweed (*Centaurea jacea*) which was easily the most common plant present, growing in vast banks of purple. On a single day we spotted about eight of these butterflies including two of the female form *helice*. Upon looking over the hedge we saw that a field nearby was planted with clover and that amongst the more usual Whites and Brimstones more Clouded Yellows could be seen feeding.

Furthermore, a day's outing to the Old Harry rocks off the Isle of Purbeck, Dorset, revealed still more of them along the cliff edge, seemingly having only just arrived from the Continent.

In my experience last summer was particularly good for Clouded Yellows — after visiting Romsey for the past five years this was the first time I had seen this butterfly there. I wonder whether perhaps the hot July weather we had this year encouraged more of them to travel north from Europe than is usual?

P. A. Kelsall (7181)

A WALK IN A HAMPSHIRE WOOD

In the last week in July, with the continuing blazing hot weather, I had a day out with a fellow member, Vernon Shearer, and visited a large oak woodland on the Hampshire border. The wood is well maintained with nice broad rides into which the sun has full access and the undergrowth is mixed and vigorous. Gatekeepers, Speckled woods and a few Meadow browns fluttered up as we walked along and on coming into a clearing deep in the wood we found a host of butterflies on a thick clump of tall thistles. There were a few Silver-washed fritillaries, several Brimstones of both sexes, Large, Green-veined and Small whites and a dozen or more Peacocks feeding at the flowers. It was noticeable that with the sun near its zenith the Peacocks were feeding in the shade. As we watched, one or two White Admirals sailed by and by searching the honeysuckle sprays under the canopy beside the rides we found several small larvae on the leaf tips, characteristically eaten to leave the central rib projecting. In a dell at the bottom of the ride we found that the Purple Emperor had been laying her eggs on some of the Broad-leaved sallows; these were obviously fairly recently laid. We spent some time wandering along the rides enjoying the wealth of butterflies on the wind and suddenly observed a large female Purple Emperor flying towards us. She circled around some sallow bushes and then landed on a bramble clump below one of the bushes. She appeared to be seeking the shade rather than looking for egg-laying sites. My hasty swipe with the net missed her, the bramble snagging the net. A further bonus was to see a Clouded yellow dashing about further down the same ride. There are few woodlands toc where one could enjoy such a feast of species and the wonderful summer last year gave a real boost to the sun-loving butterflies. With adequate habitat there would be little to fear for the future of our native species.

A week later I was on holiday in Sussex and had the pleasure of watching a steady influx of Clouded yellows from Shoreham to Newhaven, accompanied by a few Painted Ladies and Red Admirals. On the Downs there seemed to be some resurgence of the Chalkhill blue but many good sites of yore have been heavily overgrazed and have obviously suffered badly from it. The intensive use of the downland for growing cereals has placed great pressure on any available grazing and a situation of loss of habitat by ploughing has been exacerbated by this. One has only to experienced the damage done by grazing in the mountains of Europe to appreciate the great threat that now faces our downland flora and fauna.

P. W. Cribb (2270)

RETURN TO CRETE

It was late September, when I decided to return to Crete, a few days before I had been to the AES Exhibition. I had stocked up with the necessary gear for the many field expeditions which I would make while there. After going through all the usual procedures, I was soon on the plane and away to the sunny Island which had been so nice on my previous visit.

I had decided to take a villa in a place called Kalamaki on the opposite side of the Island. The reason for choosing this area was because I wanted to see if the Flora and Fauna were different and more varied. I was going to be more cautious as I had read in a recent guide book that a venomous spider (*Rhogilida*) lived under stones and in underground burrows, and furthermore this particular area was supposed to be wilder; I was not to be disappointed.

When the plane landed and all the pasengers were shown to their separate coaches we finally were on our way. It was supposed to be a short trip but the journey through the night seemed to be an eternity; I decided to have a sleep for a while. When I awoke we were still rolling along, and the driver had switched on the television and we had a dose of world-wide news in Greek.

We finally arrived at our destination. I was still very tired but the first thing I did was to make myself a refreshing cup of tea. I strolled out on to the balcony and saw a young lizard waiting for its prey; obviously it was a creature after my own heart. Then I retired and was soon asleep.

The following morning, I decided to make a tour of the surrounding countryside. My first impression was that it was like a scene in the Mohave desert in America. I strolled up the road and I carefully turned over some stones where I found baby scorpions which were brown in colour. I went further along and turned over more stones; this time I found some beetles. Several specimens of the Carabid *Carabus glabratus* Payk, and I found a new Tenebrionid to add to my collection; it was blackish in colour with a smooth round prothorax and the dentations on the elytra were in rows. It was later identified as *Dendarus opaculus*. This beetle I was to find almost everywhere. I came back to the villa, and went into the garden to try and find some more specimens. I turned over a rotting mat and found two more beetles new to me, one was *Anthicus floralis* L. and the other was a small Staphylinid, checked later as being *Anotylus complanatus* Erichson. I put the specimens away for the time being and sauntered down to the restaurant for something to eat, and decided to have a swim. After coming out of the water, I walked along by a rivulet making its way out to sea and under a log I found one specimen of *Chlaeinius vestitus* Pk.

I noticed a promontory not far away, but decided to venture up there another day. It was late afternoon and so far it had been very exhilarating, 'who knows?' I thought to myself what will I find this evening, as I returned to the villa. That evening as I and some fellow holidaymakers were relaxing in the cool evening air outside the restaurant, and one of them was looking in surprise at a large green insect climbing up a wall. On closer examination it turned out to be a praying mantis, a female *Mantis religiosa* L. On the ground I found two small female specimens of *Oryctes nasicornous* L.

During the next few days, I wandered around to the promontory and as expected I found the common ant *Campenotus gigas*. I turned over a stone and to my surprise I saw a huge spider, a female with her egg sac, I did not want to find out if it was the 'Deadly Rhogilida' or not so I quickly put back the stone. Under another stone I found two quite large specimens of *Ocypus olens* Muller and a new specimen of *Amara*, this one being A. *ovata*. Another day I took the local bus to a small town called Kolymbatori; it was a very hot day and I managed to catch the Chrysomelid *Donacia vulgaris* Zschach, which was alighting on a white wall.

When I returned to the villa in the evening to the chorus of chirping crickets I noticed that the light outside the villa had attracted a host of moths, bugs, beetles, young praying mantids and millipedes. I found two species of Curculionids (Weevils) which were new to me. One was the red *Otiorhynchus scaber* and the other was *O. ligusticia* and not far away on the ground under a street lamp I found the clay colour weevil *O. singularis*.

The moths that were attracted to the light were many, but I was only able to identify three; The Plume moth *Pterophorus pentadactylus* L., The Gold tail *Euproctis similis,* Fuesly and The Peppered moth, *Biston betularia*. Also during the day, earlier on, while walking along the promontory I noticed the large beautful yellow and black swallowtail, *Papilio machaon*.

While I was drinking my tea and preserving my day's catch, I heard the humming noise rather like a bee. I had accidentally left the window open and the green hemipteron, *Palomena praesinum* had flown in and was buzzing around the light. The following day I went to the nearby town of Chania with its picturesque harbour and to see the sights and do some shopping as a change from collecting. During the next few days, I found around the villa specimens of the Carabid *Feronia niger F. vulgaris* and the green Chrysomelid *Chrysomela anea*. Also I noticed the yellow Pharoh's ant *Monomorium phaeronis* which sometimes entered the villa and I nearly lost some of my specimens because of them and had to spray the villa with insect repellent.

In a few days time I was going on a trip to the famous Samaria Gorge on the southern part of the island. The journey by coach was long, but enjoyable. We were allowed to wander around for several hours and I took the opportunity to search for some beetles, this part of the gorge is very rocky and the vegetation is sparse. I managed to find four beetles, three were new to me. I found two Tenebrionids, one being the common *Cripticus quisquilius* L. and a specimen which looks like a member of the Trogidae but is in fact a Tenebrionid; this specimen turned out to be *Gonecephalum rusticum*. I also found a new beetle called *Zimioma grossum* and a maritime Histerid, *Pachylopus maritimus*. I searched for more beetles in this desolate windy place but found none.

It was now time to leave for home; I was sorry to leave Crete and while I was sitting in the coach on the return journey to the airport I knew that it had not been spent in vain; on the contrary it had been two weeks of experiences and outings adding up to yet another pleasant trip.

Mark Johnson (3464J)

THE MAYFLY

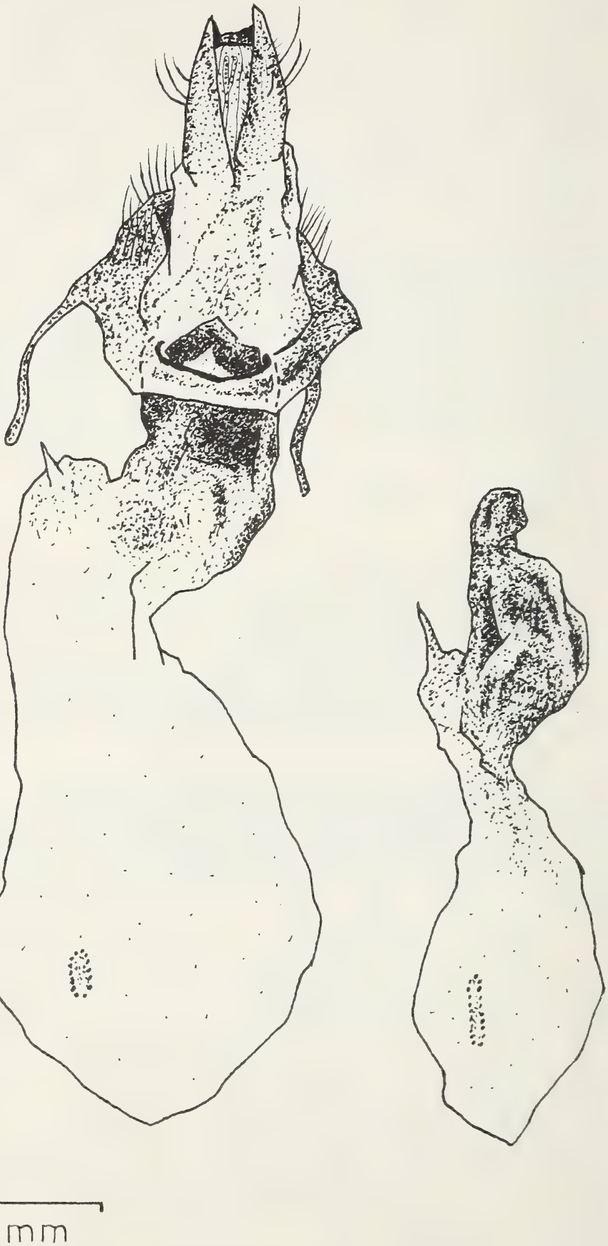
Poor insect! What a little day
  Of sunny bliss is thine!
And yet thou spread'st thy light wings gay,
  And bidd'st them, spreading, shine.

Thou humm'st thy short and busy tune,
  Unmindful of the blast;
And careless, while 'tis burning moon,
  How quick that noon be past.

A shower would lay thy beauty low;
  A dew of twilight be
The torrent of thy overthrow —
  Thy storm of destiny!

Then spread thy little shining wing,
  Hum on thy busy lay;
For man, like thee, has but his spring —
  Like thine it fades away.

MRS ROBINSON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A TERATOLOGICAL NOCTUID

I took a female noctuid with a Robinson trap in Leicester on 26th June 1982, which subsequently proved to have a partial duplication of the female genital tract.

When dissecting out the genitalia to determine if it was either *Apamea remissa* Hb. or *A. furva* D&S I found an additional organ which I could not identify. On further examination it appeared to be a partial duplication of the genital tract. This was later confirmed by D. J. Carter, Department of Entomology, British Museum (Natural History) and is shown in the figure which was drawn by P. R. MacPherson.

The specimen was determined by John Heath to be *A. furva* and is now in the Leicestershire Museum collection.

D. H. Hall-Smith (4954)

SHORT NOTE

Observations from South Herefordshire — Last year, as reported in the *Bulletin* (Vol. 42 p. 38) I reported Hummingbird Hawk Moths. In 1983 further interesting species came to my notice in Garway. For the first time I was able to record a definitive sighting of the Silver-washed fritillary (*Argynnis paphia* L.) which although very battered was unmistakable and this was seen on August 6th. Clouded yellows (*Colias croceus* Fourcroy) can only be described as 'fairly common' seeing that I sighted five specimens between August 5th and September 1st. My father also identified one at Gloucester County tip in mid-July. Most remarkable of all, on August 31st — September 1st, I caught a Convolvulous hawk moth (*Herse convolvuli* L.) in our Robinson MV trap, a male specimen. I would be most interested to hear of any others that have been caught or sighted.

Theresa Strange (6721)

(Convolvulous Hawks seem to have been not uncommon last year. See other reports published in this issue, and we have heard of and seen others — Editor.)

OBSERVATION

Unusual foodplant for Giant Atlas Moths — While visiting the New Forest Butterfly House at Ashurst in July last year, I spotted some final instar larvae of *Attacus atlas* L. feeding happily on buddleia. I was informed that the ova had been laid on this pabulum and the larvae had remained on it all their life. They certainly looked very healthy.

J. Green (4932)

PUPATION OF PAPILIO MACHAON L. — SUSPENSION AND DIMORPHISM

Mr Cribb's notes on the above (Cribb 1983) have reminded me of various points. Firstly, the method of suspension. The following extraordinary statement appears in Talbot's *Fauna of British India*, Butterflies, Vol. I, (2nd. edit.):— 'The pupa (in the genus *Troides*) unlike that of other groups of the family, is sustained by separate lateral threads attached by a tubercle on each side and not by a loop round the middle.' A moments thought will show the impossibility of this mode of suspension; the larva cannot possibly attach the lateral threads to its own larval tubercles, at the time of moulting they would either break loose or be shed with the larval skin, in either case a disaster. In a note printed in the *Entomologist* (1948, 81:136) I suggested that the larva was suspended by a girdle in the usual way and that the weight of the heavy pupa imbedded the girdle in the unhardened cuticle across the dorsum. This note elicited a response from a correspondent in the United States, who had previously been stationed in Guadalcanal and New Georgia, and who had bred a great number of species of the group. He confirmed that the pupae were supported by a complete loop, as suggested by me, and I published the information in the *Entomologist* (1949, 82:45). Incidentally, the tail pad is spun before the girdle.

Secondly, dimorphism. From Mr Cribb's note, it would appear that he had no 'rogue' pupae, i.e. green pupae on brown backgrounds and *vice versa*. The only recent paper that I know is Wiklund (1975) which is more concerned with the protection afforded by the colour of the pupa in relation to the background. There is, however, a vast volume of papers on the causation dimorphism in pupal coloration, but without any one definite cause emerging. The species involved have generally been the Indian *Papilio polytes* L. and *P. demoleus* L. used in Britain, *P. demodocus* Esp. and *P. nireus* L. used in East Africa and four American species, *P. polyxenes* L., *P. troilus* L., *Battus philenor* L., and *Eurytides marcellus* Cr. used in the USA. Amongst other factors having a bearing on the pupal coloration, are background colour, roughness or smoothness of substrate, ratio of light to darkness, thickness of support, i.e. thin twig or thickish branch, relative humidity and many others. Working with *P. nireus*, I found that pupae formed on glass as a substrate in complete darkness were invariably green, (rather too few to be definite statistically), whereas larvae that pupated on a rough substrate, also in complete darkness, gave a roughly two to one ratio of brown to green (unpublished). With *demodocus* more green pupae appeared on a smooth substrate and more brown ones on a rough one. However, a batch of *demodocus* reared under rather crowded conditions gave a hundred per cent brown pupae irrespective of substrate; all previous experiments had been reared as singletons.

In 1956 a paper was published (Hidaka, 1956) describing experiments with the Japanese species *P. xuthus* L. and *P. protenor demetrius* Cr. It was stated that all pupae formed in small, dark boxes were of the brown form and that, in July and August, when the weather was very hot, the majority of the pupae were green. It is not altogether clear that these green pupae were not formed in the small dark boxes, but the inference is that they were not. For this reason the experiments were carried out in June, September and October. The first series of experiments consisted of tying a fine silk ligature tightly round the pharate pupa at either 7 am or noon following the evening during which the larva suspended itself. The result of the 7 am ligature was to produce a parti-coloured pupa, the part anterior to the ligature brown and the posterior green. When the ligature was placed at noon, all the pupae were completely brown. The second series consisted of destroying various ganglions and it was found that pharate pupae without the ganglion of the head, the suboesophageal ganglion or the prothoracic ganglion always produced green pupae, whilst those that were without the ganglion of the meso-thorax or the first abdominal somite mostly produced brown pupae. From this it was deduced that it was essential that the complex of the cervical, suboesophagal and prothoracic ganglions be intact during the prepupal period if a brown pupa was to be produced, and it was suggested that the brown colour was the result of a hormone produced, or controlled, by them.

D. G. Sevastopulo (5562)

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A NOTE ON THE DEATHS HEAD HAWK

I was fortunate to receive eighteen ova of *Acherontia atropos* and from these sixteen larvae were of the standard form of green with purple stripes but two were of the brown form with two part pink thoracic segments. Is this ratio rare and is there a reason why this moth should produce such disimilar coloured larvae? I also noticed that some of the larvae emitted a loud clicking noise when disturbed but I can find no mention of this in any of the standard text books. Although they have been kept in an unheated room their rate of growth was amazing and just five weeks after hatching the larvae started to burrow.

David Webb (6829)

BUTTERFLIES IN NORTHERN YUGOSLAVIA

In 1980, 1981 and 1982 I spent summer holidays in various parts of Slovenia and Croatia, the northern republics of Yugoslavia (see map). I got a fairly good impression of the butterflies on the wing in late June, July and early August. I observed a total of 109 species, of which twelve were found outside the range given for them in the various field guides.

Northern Yugoslavia is superb butterfly country with an abundance of flowery meadows. The landscape is dominated by limestone or 'karst' hills. There are extensive areas of grazed rough grassland and hay meadows, still cut by hand, though small tractors are on the increase. Traditional agriculture is declining as the population becomes more urbanised. Woodland and scrub are encroaching on the grassland, and in Slovenia now cover more than half of the land. (Compare this with less than a tenth in Britain.) Habitat conservation — not just in terms of sites, but of land management in general — becomes vitally important if this unique heritage of wildlife is not to be lost.

The butterfly populations of all but a few areas of northern Yugoslavia have been little studied, and there is a feeling of excitement in exploring an unknown profusion of butterflies. The 'top ten' species were not entirely unexpected: *M. galathea*, *M. jurtina*, *O. venata*, *L. sinapis*, *P. icarus*, *M. athalia*, *A. mannii*, *C. pamphilus*, *C. arcania* and Marbled fritillary (see checklist). But there are surprises around most corners — whether a single *Apatura ilia* flying at high speed, a feeding party of *Brenthis hecate* or *A. levana* on a patch of mountain sanicle, or acres of *H. virgaureae* gleaming in the sunlight.

In 1980 I spent six days in the field, in 1981 eleven days, but it was only in 1982 that I really concentrated on butterflies. Accompanied by two friends from London I found 87 species, again in eleven days. In 1980 and 1981, accompanied by Dutch friends, I spent more time looking at birds and plants. Apart from a few nature reserves to which we were taken by Slovenian friends, the localities visited were chosen at random. I have grouped them into nine areas which are shown on the map and described below. The abundance index for an area is the total 'score' derived from the marking from one to four in the checklist for each species; extra marks are given where a species was extremely abundant. Identification was undertaken, where necessary, by netting and examination in pill boxes. No specimens were kept.

1. *Julian Alps* (41 species, abundance index 86)

   The peak Triglav (2863m) dominates Slovenia's only National Park, which was established in 1924 and was extended in 1981 to 800 square kilometres — or 4% of the Republic. Its butterflies have been studied since the end of the last century; in 1967 Carnelutti and Michieli listed 101 species.

In 1980 we made the steep climb to Triglav lakes at 1650m but found only a single rain-sodden *A. napi*. The weather was better in 1982 and we took the cable car to Vogel at 1550m. The scenery and alpine flowers were magnificent but the only butterfly of note was Dewy ringlet.

The hillsides are covered with spruce and beech forest. Lower down there are hay meadows at Voje (700m), Bohinj (650m) and in the valley of the Sava towards Bohinska Bistrica (515m). This is the area described by Nigel Gossling in *AES Bulletin No. 333*, though we were there three weeks earlier in the season *L. sinapis* and *A. napi* were widespread and the subspecies of the latter, *A. napi bryoniae*, was locally numerous as low down as Lake Bohinj (525m). In the fields by the lake several *C. crocea* and *C. cardui* were present along with a colony of *P. hippothoë*. Elsewhere haymaking was not so far advanced and we found several colonies of *L. idas* and *M. diamina*, although *M. athalia* was generally more widespread and abundant.

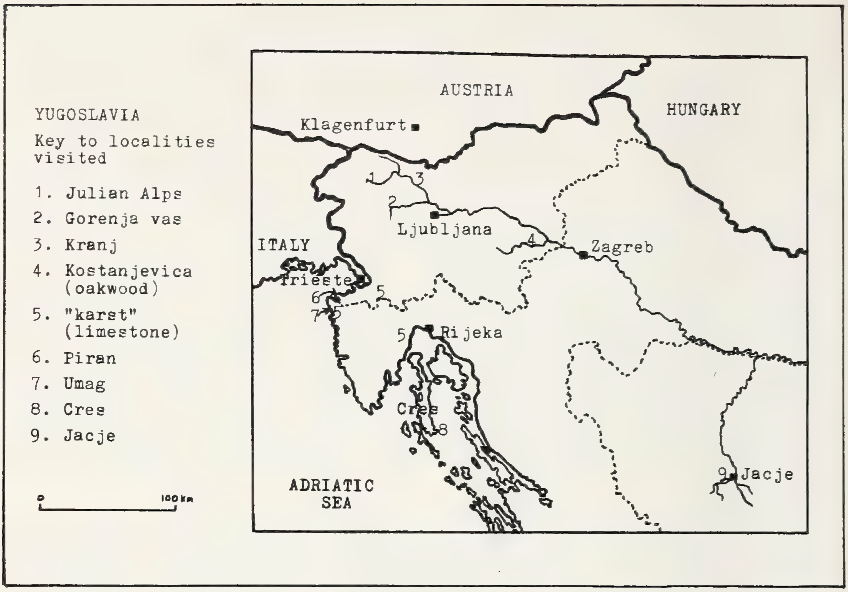
At Voje meadows *A. agestis* was plentiful as was *M. aglaia* and there were smaller numbers of *E. ligea*, *E. medusa* and *P. alveus*. We also saw a few *F. adippe* and *F. niobe* fritillaries, neither of which are listed by Carnelutti and Michieli. A long detour by car brought us to the northern side of the mountains, more spectacular scenery and new butterflies in the shape of a male *A. cardamines* and a colony of *H. lucina* in a spruce forest.

2. *Gorenja vas* (55 species, abundance index 130)

This small town on the Poljanscica river is only 30 kilometres west of Ljubljana as the crow flies, but a good two hours drive through the hills, which rise to 1000m in places. Our observations were made on walks around one small village — meadows by the river (450m) and along a hilly ridge (850m). We stayed with friends for five days in mid-July 1980, for two days in early August 1981 and for one day in early July 1982. On this one day alone, we saw 38 species of butterflies.

The landscape, seen from a hilltop, is a vast panorama of hills and river valleys, clothed in oak, beech and spruce forest and dotted with meadows, farmsteads and villages, especially on the summits and in the valleys. As well as hay, there is some small-scale cultivation of wheat, maize, potatoes, rape and apples.

Within the rich butterfly fauna of this district, two species deserve special mention for their sheer numbers. I counted 1200 *H. virgaureae* on a morning's walk on Augst 2nd 1981; the total population of this species in western Slovenia must be well over 20 million. More widespread and therefore probably even more



numerous were the *M. galathea*. On the same walk I counted 600 on one hillside; the form *leucomelas*, with completely white undersides, occurred in about 1% of females.

Fritillaries were well represented with eleven species, of which *F. adippe* and *M. athalia* were the most numerous. It was noticeable how the last-named and many other species disappeared from one day to the next as the hay was cut. This happens two or three times in a season, but early July finds these meadows and their flowers at their best. I found *B. hecate* on the wood edge of a steep meadow, occurring here south and west of its range as given in Higgins and Riley. Another pleasing discovery was *M. arion* in two separate localities on August 2nd and 3rd 1981. A single male *A. iris* frequented a manure heap by the river on July 3rd, 1981. Further up-river a few minutes later, a blur seen in the corner of my eye became, amazingly, a male *A. ilia* in my net! I also observed the velvety brown and red *Erebia styx*. Many *Erebia* species have a very restricted distribution in various parts of the Alps, but *E. styx* may be more widespread than previously believed. Apart from finding it here in small numbers on wood-edge at 450 to 500m, I saw it at about 1100m near the Ljubelj pass to Austria and, a few days later, quite commonly in woodland clearings east of Salzburg.

3. *Kranj* (28 species, abundance index 58)

Kranj is a busy town of 31,000 inhabitants about 25kms north of Ljubljana at the confluence of the Kokra and Sava rivers. We spent a warm and sunny day in early July 1982 visiting areas some seven to ten kilometres north of Kranj.

Our first stop was in a large area of damp meadowland east of Hrase (420m). The meadows are divided by 'hedges' of mature oaks and sweet-smelling limes and eventually give way to well-grown conifer plantations. *Brenthis daphne* were much in evidence and a few *B. hecate* and second-brood *A. levana* frequented a patch of mountain sanicle and umbellifers at the forest edge. As well as *C. crocea* we saw and photographed a female *C. hyale*. Along the hedges were a few *N. ilicis* and *Neptis rivularis*, a species which really lives up to its name of Glider. I was attracted to a *L. duponcheli* by its yellowish coloration and angular forewings; closer inspection revealed the confirmatory dark-tipped antennae. No Wood whites were on the wing in this area. The distribution map for *L. duponcheli* in Higgins and Riley does not tally with the text, which adds lower Austria, Czechoslovakia and Yugoslavia to its range. I had found this species in 1981 on the island of Cres (see 8. below).

Our other two stops were between Baselj and Trstenik at about 500m in more hilly land with flowery meadows and mixed forest. We saw a male *A. iris* at the edge of a wood and also found a few *F. niobe* and *L. sinapis*. I penetrated the forest through it, knee-deep in coltsfoot and meadowsweet. This was the only place I saw *B. ino*, apparently slightly south of its range given in the various field guides.

In all three places *M. diamina* and *M. aurelia* were quite numerous and, in the first, *M. athalia* fritillaries were also present. Examining the undersides of these three species can drive you crazy, especially as the illustrations and descriptions of *M. aurelia* differ in each of the field guides. However, there is a size difference. *Athalia* is the largest, *aurelia* the smallest and *diamina* is somewhere in between.

4. *Kostanjevica* (21 species, abundance index 49)

This village (158m) is the site of a Cistercian monastery founded in 1234 but it is now better known for its art galleries and viniculture. To the north of the village in the plain of the Krka river is an extensive oak forest, the centre of which is a nature reserve. We visited the oakwood with Slovenian friends on July 9th, 1980 and July 20th, 1981. The chief attraction was the birdlife, including Middle Spotted Woodpeckers; however, there were a number of butterflies, like *L. morsei*, *G. cleopatra*, *L. camilla*, *N. sappho*, *A. hyperantus* and *L. achine* which we saw nowhere else.

5. *Karst* (57 species, abundance index 106)

Limestone rock extends from the Julian Alps down the Istrian and Dalmatian coast and the name given to this region is the 'karst'. It has many special physical features — lakes and natural springs, hills

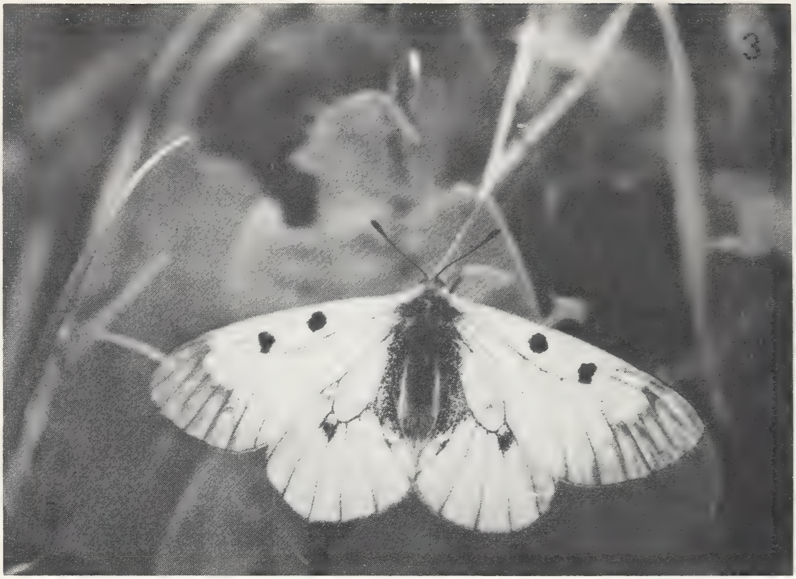


Fig. 3. Clouded Apollo *(Parnassius mnemosyne)* near Rijeka, 24 June 1982. Photo:R. Price.

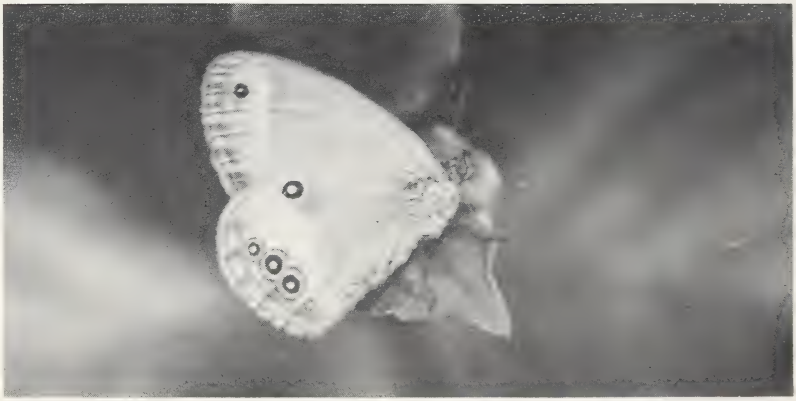


Fig. 4. Pearly Heath *(Coenonympha arcania)* near Umag, 22 June 1982. Photo: R. Price.

and plateaus, cliffs and gorges, and vast natural cave systems. The 'karst' is also the home of some 100 endemic plant species.

The typical 'karst' habitat that we explored for butterflies was rough grazing land (usually ungrazed) with small oaks, juniper and other bushes and bramble patches. It late June 1982 we visited several such areas near Buje not far from the coast in northern Croatia. The commonest butterflies here were *A. mannii*, *L. sinapis*, *B. daphne*, *M. didyma*, *M. athalia*, *M. galathea*, *M. jurtina*, *C. pamphilus* and *T. flavus*. *Brintesia circe* seemed to like settling on roads (as well as on my feet) and often ended up as traffic casualties. Some more unusual species which occurred fairly regularly in small numbers in this habitat were *A. crataegi, C. australis, S. spini, E. alcetas*, *F. niobe*, *P. alveus* and *Heteropterus morpheus* — south of its range shown in Higgins and Riley, though it was even more common at the coast.

On July 21st, 1981 we visited Slavnik, a heavily grazed mountain top at 1028m on the Slovenian side of the border, with impressive views over the Gulf of Trieste. It is a well-known locality for a protected plant, the Great yellow gentian. In the butterfly line, *M. aglaia*, *M. galathea* and *C. glycerion* were particularly abundant; further down we saw *A. paphia* and *C. dia* fritillaries.

On June 24th, 1982 we drove from our hotel at Umag to the highest mountain we could see on the map within striking distance: Ucka, overlooking the Gulf of Rijeka. We could not find a way to the top of the mountain (1396m), but there were some interesting butterfly habitats and a very good restaurant at about 900m. In a roadside clearing in the beechwoods we saw three *Parnassius mnemosene* and a host of *A. amanda*. Some of the other species in evidence were *C. cardui* and *adippe* and *althalia* fritillaries, *H. semele, E. medusa* and *L. maera*. After lunch we explored some flower-rich meadows nearby, where we added to our list *G. alexis* and *E. eumedon*, and on the stony roadside a single *G. nostrodamus*.

The 'karst' would doubtless repay further investigation in terms of butterflies. Although it is a vast area, the grassland habitat is gradually being encroached upon by scrub due to afforestation and a decline in animal grazing.

6. *Piran* (19 species, abundance index 47)

This old town with narrow streets and tall houses situated on a promontory on the gulf of Trieste is now a crowded holiday resort. In such a built-up area, the only butterfly habitats are offered by grasses and broom on the undercliff, churchyards, gardens, and small orchards, fields and roadside verges on the hilltop at the edge of the town. Nevertheless, in three days at the beginning of July 1980

I saw 19 species of butterfly. Some of these were in good numbers, including *T. actaeon* along the cliffs and majestic *I. podalirius* in gardens and orchards. My most noteworthy discovery was of *C. oedippus*, on the edge of, or possibly outside of, its range as given in Higgins and Riley.

7. *Umag* (44 species, abundance index 82)

We stayed at this coastal resort for one week at the end of June 1982. It is some 40 minutes drive south of Piran into Croatia. With no cliffs, the setting is much more spacious and flat agricultural fields in the immediate hinterland stretch up to the beach in places. I have included in the checklist under Umag observations from two places just up the coast. The extra species seen in cliff-top meadows and gardens at Savdruja were *P. machaon*, *E. alcetas*, *C. minimus*, *C. semiargus*, *L. bellargus*, *I. io*, *F. niobe*, *H. semele* and *T. actaeon* and *T. flavus*. Some of these were also seen nearby at Secovlje, where the Dragonja river enters the sea, with, in addition, *P. c-album*, *F. adippe* and *C. arcania*.

Our observations at Umag itself were made in an area of uncultivated fields with bushes and elms, down a lane behind the beach near our hotel. The first species to hit us in the face, so the speak, was the *H. morpheus* with its distinctive floppy flight and silvery white discs on the undersides of the hind wings. It became a familiar sight all over Istria in the rest of the week. A few yards further on was a *N. polychloros* sitting on a bramble; we saw several more in other places, including a group clustered on a peach tree in a petrol filling station and one butterfly entering a dark hole in a hollow tree.

Along the lane were a few territorially-minded *P. aegeria* and numerous patrolling *L. reducta*. More unusual species in the adjoining fields were *A. crataegi*, *L. sinapis*, *C. rubi*, *E. argiades* and *M. phoebe*. Here we also found a colony of the attractive *P. pylaon*, well outside the range shown on the distribution map in Higgins and Riley. I found another colony of this species in similar habitat 10 kilometres further down the Istrian coast.

(to be continued)

David Withrington (7110)

SILK FROM HAWTHORN

Report on a Sericulture experiment in Scotland, 1980-1983, using a non-mulberry silkmoth — Hyalophora Cecropia *(The American Robin Moth) — Under simulated tropical conditions*

I: INTRODUCTION

A: Aims

To discover how to raise silk from a non-mulberry silkmoth in Scotland, before suggesting that Sericulture might be introduced into Zaire as an agricultural development project.

The origin of this idea was when the author observed many moths and butterflies in Zaire (1978-1979) which later led her to confer with staff of the Departments of Entomology at the American Museum of Natural History, New York; the British Museum (Natural History), London; and Musée Royal de l'Afrique Centrale, Tervuren. The subject of discussion was silkmoths in general and what work has been done on them since Independence in Zaire (1960-1980).

Social and economic difficulties in Zaire continue to be critical and many agricultural development programmes such as fish-farming and bee-keeping have been considered. The author wondered if Sericulture might prove to be a viable national or local community project by developing an existing natural resource which would not devour foreign exchange and could, as a labour-intensive industry, give work to many people — young and old, men, women and even the disabled.

Contacts were established with the Food and Agriculture Organization, (F.A.O.) of the United Nations in Rome, the International Sericultural Commission, Lyon, France and with Dr Manjeet S. Jolly, then Commonwealth Sericulture Advisor to the Government of Papua New Guinea. It was confirmed that Sericulture might be an appropriate agricultural crop in Third World countries where the climate and conditions are suitable, and that Zaire has the right climate (other conditions would have to be explored).

Sericulture projects have already been undertaken by F.A.O. at the request of the Governments concerned in Papua New Guinea and in certain African countries. A series of instruction manuals on Sericulture (both mulberry and non-mulberry) has been prepared and published by F.A.O. These F.A.O. Bulletins are available in French and English and cover also the cultivation of mulberry in different climates. F.A.O. can consider undertaking feasibility studies for sericulture projects in Third World countries such as Zaire, only if the Government of the country concerned officially requests such assistance.

The International Centre for Training and Research in Tropical Sericulture, Mysore, India provides training programmes which are jointly sponsored by the Governments of Switzerland and India. Grants are available for nationals of Third World countries, but the Institute's training programme is also open to anyone who meets the entrance requirements and will pay the fees.

Dr Manjeet S. Jolly, Director of this Institute, is a senior member of the Government of India's Central Silk Board of the Ministry of Commerce, and continues to serve as Consultant to silk-producing countries. The author visited the International Training Centre at Mysore in January 1982 and was for several days privileged to be introduced to the work of the Research Institute, which is linked with a network of Extension Centres throughout India, giving training and guidance on the rearing of silk in the villages and on the cultivation of mulberry. She learned about many aspects of the research there and was taken to an outlying Research Station and then to visit one of the agricultural projects in the villages. This was followed by a brief stop at a silk auction mart where mountains of cocoons are sold; and then to small-scale processing and reeling plants using simple technology and employing twenty to thirty people in a small town not far from Bangalore, and finally to the Government Silk factory in Mysore, where exquisite silk is woven and sold. Dr Jolly and his officers are the authors of some of the F.A.O. instruction manuals on Sericulture, already mentioned.

Reasons for the Experiment: From visits to Zaire in 1979 and 1980, the author knew that the Ministry of Agriculture, Government of Zaire, had not considered Sericulture as a possible agricultural development project. She therefore decided to experiment at home in Scotland to discover how difficult it would be for an unskilled person (herself) to raise the larvae of a non-mulberry silkmoth which might later be suitable for use in Zaire.

The experiment in Scotland began in May, 1980 with the purchase of one male and one female pupa of three different species of non-mulberry silkmoths. (Lack of mulberry in the area precluded any attempt to raise *Bombyx mori,* the traditional silkmoth.) Five moths emerged, but only the American Robin Moth *(Hyalophora cecropia)* paired successfully. The complete life cycle was observed in 1980 (pupae/moths/ova/larvae/cocoons of silk) and the cocoons were stored for the winter.

The experiment was continued in 1981 to find out if the cocoons of 1980 would yield moths which would reproduce under simulated tropical conditions in the lab; and then to discover whether the cocoons could be degummed and if the silk could then be reeled or spun. In 1982 the experiment was continued to test whether the second generation stock would be fertile and if the moths would again flourish under controlled lab conditions. Considered also was whether or not Sericulture might be viable in Scotland as a cooperative community venture.

The final phase of this initial experiment was completed last year when news was received from Kinshasa, Zaire that moths had emerged (first emergence reported was on October 27, 1982) from the cocoons spun in Scotland in June, 1982. The cocoons reached Kinshasa on July 28 and the emergence began three months later.

Communications are so difficult with Zaire that news is still awaited on whether the moths paired successfully and if a suitable foodplant was found for the larvae.

B: Selection of Species

Three species of wild silkmoths (non-mulberry moths) for which suitable foodplants are available locally in Fife, were purchased from Worldwide Butterflies Ltd., Dorset. Two of these, *Actias luna* and *Samia cynthia canningii* were not successful and others which might have been suitable were not available.

C: Location

In Scotland: The pupae were purchased on May 5, 1980 and taken to the St. Andrews-Fife area (altitude approx. 450 ft. above sea level) five miles from the North Sea. *A. luna* emerged first, followed by *H. cecropia.* The female emerged at 1900 on June 7, 1980 at Ardgour, by Fort William (sea level and 300 yards from the sea). The male emerged about the same time on June 11, 1980 at the St. Andrews location. They paired on June 12 and the first larvae appeared on July 11, 1980 on the 27th day). The conditions were cool and the larvae were pronounced 'retarded'. Therefore on August 19, 1980 they were all moved to the Department of Zoology, University of St. Andrews where the experiment has been carried on ever since, with the permission of Professor Callan.

D. Personnel

The author was single-handed until August, 1980. Since then she has been greatly assisted by the Technicians of the Department of Zoology, Mr. John B. Mackie, Mr. Iain Johnson and Mr. David Roche. Their observations and care of the stock have been invaluable and without their help the experiment would have had to be abandoned. This was a team of skilled people, but also quite unskilled in the sense that no one had previous knowledge or experience of how to raise silkmoths.

E: Previous Work

No evidence has been found that silk has been raised before from the American Robin Moth using the common hawthorns *(Crataegus monogyna* and *C. laevigata)* as the foodplant. Non-mulberry silkmoths (including *cecropia)* have been bred in USA and UK for various purposes, but those people who could be contacted through Universities and the Amateur Entomologists Society reported little experience of this species and could give us almost no guidance. None of them had attempted silk production from this species.

II: HYALOPHORA CECROPIA—DESCRIPTION AND LIFE CYCLE

Fuller details of the data presented in this section are to be found in the books quoted in the bibliography.

A: Description

1. Moth: large (10-13 cm.) with a rust-red and cream striped dorsal abdomen. The body is furry and large (approx. 2.5 cm × 0.5 cm), rust-red and furry on the thorax. Ventral abdomen appears checked with rust-red and cream and furry. Legs are rust-red and furry. Antennae are pectinate and prominent, dark brown or black. Forewings are falcate, with pinkish to red apical marking and dark brown to black oval shaped sub-apical spot, with some light grey towards post medial line. Basal areas bordered with cream, the costa dark brown with no pronounced margin. Ocellus dark pink to cream and post-medial line is double and scalloped, cream and dark pink to rust-red fading to brown. No transparancy. Sub-marginal line appears zigzagged, cream to pale and dark brown towards the margin. The hindwing margin is plain, not scalloped, of pale and dark brown. Basal areas darkish brown not bounded by antemedial line. No ocellus but a cream to dark pink crescent. No transparency. Medial line is obscure; the post medial line is double and scalloped of cream to dark rust-red and bordered with dark brown. The sub-marginal line is triple and scalloped of pale brown, dark brown and pale brown.

2. Ova: large (2 mm) oval, pale pink fading to pale beige. Larvae do not eat the shells.

3. Larvae: 1st instar: emerges all black (approx. 4 mm); 2nd instar: becomes black with yellow (approx. 8-10 mm); 3rd instar: becomes yellow with black diamonds along its back and coral red DT on segs 2 and 3 (approx.15 mm); 4th instar: changes to bright pale greenish yellow with blue tubercles, coral red Dorsal Tubercles, on segs 2 and 3 white spiracles ringed with black, bluish-grey markings among the back (two rows) (approx. 25 mm); 5th instar: bright pea green shading to blue along the sides. Blue and yellow tubercles. Coral red Dorsal Tubercles on segs 2 and 3 of the previous instar have changed to yellow or orange with black setae. The caterpiller grows during this instar from approx. 4-4.5 cm to between 8 and 10 cm before it stops eating to spin.

4. Cocoons: Usually 5-7cm long. Colours vary from white to silvery grey and from pale tussah beige to darker tussah brown, sometimes with russet tinge. Cocoons are not quite closed, some are tight and conpact spun along a twig, others are baggy and softer. All are double.

5. Pupae: large (about 3 cm) and dark brown to black.

B. Life Cycle

1. The moths emerge, pair and die within 10 to 14 days.

2. Ova: from laying to larvae approx. 18 days, but in very cool conditions up to 27 days. Ova to the start of spinning (i.e. ova to silk): approx. 32 days.

3. Instars of larvae: no chance for precise observation, but believed to be approximately as follows:

1st instar: 1st to 3rd day
2nd instar: 4th to 8th day
3rd instar: 8th to 12th day
4th instar: 12th to 18th day
5th instar: 18th to 32nd day

4. Cocoons: Caterpillers begin to spin about the 32nd day, usually completing the outer cocoon within 24 hours and the inner cocoon at intervals over the next 48 hours. Experienced breeders do not disturb the cocoons for a further week. In their natural habitat (North America) the moths do not emerge for several months — usually in May after a long winter.

C. Habitat

North America—Canada: from Nova Scotia to west central Alberta. USA: commonly in the East along the Atlantic coast from Maine to northern Florida and west to the Rocky Mountains, reported by Lemaire. Collins and Weast also reported the presence of the moth in parts of Texas.

D. Bromatology

1. Reported in USA: by Collins and Weast	Wild cherry	*Prunus avium*
	Maple (box elder)	*Acer negundo*
	Willow	*Salix* (no other details)
	Birch	*Betula papyrifera?*
	Wild plum	*Prunus americana* or *Prunus spinosa?*
	Chinese lilac	*Syringa sweginzowii* or *Syringa vulgaris?*
	Buttonbush	*Cephalanthus occidentalis*
	Alder	*Alnus glutinosa?*
	Elderberry	*Sambucus nigra*
	Wild prunus	*Prunus* (no other details)
2. Reported in UK: by Crotch, Gardiner and Robert Goodden	Wild cherry (gean)	*Prunus avium*
	Willow	*Salix* (no other details)
	Hawthorn	*Crataegus monogyna* *Crataegus laevigata*
	Apple	*Malus* (no other details)
	Blackthorn	*Prunus spinosa L.*
	Pear	*Pyrus communis L.* (?)

3. Used in Scotland: during this experiment	Wild cherry (gean) Hawthorn	*Prunus avium* *Crataegus monogyna* *Crataegus laevigata*

III: MATERIALS

A. Simulated Tropical Conditions

As the experiment was geared to the hope that Sericulture might be reintroduced into Zaire (Africa) as an agricultural development project, it was necessary to discover whether this moth could survive and flourish in simulated tropical conditions, in a laboratory:

1. Room: 10 ft × 7 ft and 6 ft 3 inches high with a working bench along the walls and a sink with cold water tap opposite the door, and controlled temperature equipment.

2. Equipment:

(a) Moths: these moths are large (wingspan approx. 13 cm) and they were placed in black net cylindrical cages with a zip, for pairing (46 cm 3 56 cm or 18 inches × 22 inches).

(b) Ova: eggs were placed in small round plastic transparent boxes (5 cm × 2 cm), ventilated by taking off the lid daily, until the larvae appeared.

(c) Larvae: were moved on a leaf of the foodplant to larger transparent plastic boxes (29 cm × 15 cm × 10 cm or 11.5 inches × 6 inches × 4 inches) with five small holes in the lids for ventilation.

(d) Cocoons: were stored in cardboard shoe boxes (approx. 12 inches × 6 inches × 4 inches or 31 cm × 15 cm × 10 cm) in a cool temperature (12°—15° C.) in another room.

(e) Pupae: were placed in a net cage (46 cm × 140 cm × 53 cm or 18 inches × 56 inches × 21 inches) on corrugated cardboard with twigs to help the moths climb after emergence.

3. Temperature: between 22°—25° C. in 1980 and 1981. During 1982 the temperature was sometimes as high as 26° C., but it was found that the moths and the larvae do best between 23° and 24° C.

4. Humidity: usually between 40% and 50%, but there were unavoidable variations from 30% to 70%. High humidity is characteristic of Kinshasa, Zaire.

5. Light: Fluorescent strip lighting (80 watts) was usually provided for a maximum of eight hours per day (0900 to 1700). It was less regular at weekends (occasionally no light at all) with no noticeable deterioration in the moths or larvae.

B. Foodplant

In 1980 both Wild cherry (gean) *(Prunus avium)*and Hawthorn *(Crataegus monogyna* or *laevigata)* were used. In 1981 and also in 1982, only Hawthorn, growing wild in Fife, was used.

IV: METHODS

A. Pupae

When the pupae began to emerge they were moved to a warm temperature of 24° C. and placed in a large netted cage (46 cm × 140 cm × 53 cm or 18 inches × 56 inches × 21 inches) and mist-sprayed with water three times a day. Some were laid free on a horizontal surface of corrugated cardboard at the base of the cage. Others were pinned to a vertical surface of corrugated cardboard within the cage. A few were suspended free by a thread within the cage. Twigs were provided to assist the moths to climb after emergence. After losing several moths during emergence, the cocoons were split open carefully lengthwise with scissors, to give the moths less of a struggle.

B. Moths

After their wings had formed and dried out (allowing at least 12 hours), the moths were placed in the cylindrical net cages (46 cm × 56 cm or 18 inches × 22 inches with a zip fastener for access) suspended from hooks in the same warm temperature of 24° C. for pairing and egg laying. A kitchen paper towel was placed in the bottom of the cage and below it on the floor to prevent the weaker moths from becoming entangled in the netting, and to catch any loose eggs.

C. Ova

Eggs were gathered from the netting of the breeding cages and placed in small round transparent plastic boxes (2.8 cm × 6 cm diameter) lined with Kleenex. Only when the larvae emerged were they moved on leaves of the foodplant (hawthorn) to the larger transparent plastic boxes (29 cm × 15 cm × 10 cm or 11.5 inches × 6 inches × 4 inches) with five small holes in the lids for ventilation.

D. Larvae

Larvae were raised in the plastic boxes (29 cm × 15 cm × 10 cm) which were placed on the working bench of the same room with the warm temperature of 24° C. and humidity of 40% to 50% and the lighting (fluorescent strip of 80 watts) for approximately eight hours per day. The boxes were lined with a kitchen paper towel and the number of larvae in each box was decreased as they grew. For the last few before spinning when the larvae were up to 10 cm long, there were a maximum of three or four to a box. Four dozen boxes were in use. The larvae were graded in the boxes according to their size.

1. Feeding routine: Freshly picked hawthorn was given at least three times daily. In 1982 it was found that 5 kilos of hawthorn was consumed daily for the last two weeks before spinning by approximately 500 larvae,

at different stages of development. Even in wet weather (frequent in Scotland) the foodplant was freshly picked and dried with paper towels before being placed in the boxes. In addition to regular feeding times (0930, 1300, 1700) the boxes were topped up if necessary.

2. Cleaning routine: The kitchen paper towels placed at the base of the boxes were changed each day. If there was any sign of moisture below the paper towel, the boxes were disinfected with MILTON 2 STERILIZING FLUID (purchased from Boots Ltd.) used neat, then rinsed with water and dried before the larvae were replaced with fresh foodplant. Only when a spinning caterpiller was in the same box as a non-spinning caterpiller was it difficult to remove the frass daily. During the cleaning, each larvae was inspected daily and any which showed signs of weakness or abnormality were isolated in a hospital box for further observation. The previous day's foodplant was thrown out.

3. Handling routine: In order to prevent the possible transfer of infection, every effort was made not to handle the larvae. When it was necessary to transfer the larvae from the boxes during the daily cleaning routine, this was done by moving them from the boxes on bits of the foodplant, sometimes using tweezers or cutting around them, if necessary, with scissors.

4. Spinning routine: every effort was made not to disturb the spinners, but when the caterpillers chose to spin in the corners of the boxes rather than among the twigs provided or the foodplant, this did not seem very satisfactory. Moving the caterpillers just as they seemed about to spin was not much better. They are very active and very independent so in the end they were left alone to spin wherever and the cocoons were not removed for storage for ten days. In 1982, the caterpillers which failed to spin were placed in a separate box where, after three to five days during which they shrank in size, they shed their skin and appeared as a pupa.

Three female moths emerged from this batch on March 8 and 10, 1983.

E: Cocoons

After ten days the cocoons were carefully removed from the plastic boxes and stored in cardboard shoeboxes (31 cm × 15 cm × 10 cm or 12 inches × 6 inches × 4 inches) interlined with kitchen paper towels, up to 30 cocoons in one box, and placed in a cool temperature (12°—15° C.). The period of storage has been six to eight months.

F: Diseases

Only five out of approx. 500 larvae died in 1982 after voiding the chain-type excreta characteristic of bacterial infections. (See F.A.O. Bulletin No. 29, Non-Mulberry Silks 1979, p.62.) Any larvae showing signs of other abnormality were immediately isolated in separate boxes for observation. Often they could be returned to join the others after a few days.

G. Deaths

Casualties mostly occurred from accidents which included: larvae becoming impaled on the spikes of the foodplant; losing their anchorage whilst changing instars; getting tipped out with daily cleaning or nicked by a pair scissors, or from other errors. (See observations.)

(To be continued)

Cecilia Irvine (7080)

PARASWAMMERDAMIA SPINIELLA: YPONOMEUTIDAE

On a visit to Holywell Bay, near Newquay, Cornwall on August 8th, 1983, my attention was immediately drawn to some short scrubby plants of *Prunus spinosa* (Blackthorn) which were growing along the roadside hedge. The verge had been closely trimmed by the local council, so that the Blackthorns were only a few inches high, and yet everywhere one looked, over a distance of perhaps a quarter of a mile, they were densely covered in masses of grey webbing, containing countless larvae of *P. spiniella*. Although there was still some uneaten foliage on most of the plants, it is doubtful whether all the younger larvae would have found enough leaves to last them to maturity. This species is not normally strongly gregarious, and it came as a surprise to find such a vast quantity of these larvae along the same short stretch of hedge.

I took a couple of dozen of them home for rearing, only to find, about two weeks later, that nearly all of them were parasitized by what I assume to be a species of Braconid wasp. The few unparasitized larvae duly made their cocoons and produced moths in early September.

It is interesting to note that both Ford (1949) and Emmet (1979) show this species as univoltine with larvae occurring from September to June, and moths appearing in July and August. However, there seems little doubt, from my previous observations of this species, that in most years it is either bivoltine or partly so in Cornwall, as full-fed larvae have been taken both in May and in August, to produce moths in June and September respectively.

John L. Gregory (4116)

REFERENCES

EMMET, A. M. (1979) *A Field Guide to the Smaller British Lepidoptera*. BENHS, London.

FORD, L. T. (1949) *A Guide to the Smaller British Lepidoptera*. SLENHS, London.

MIGRANT NOTES

Convolvulous Hawk at Hythe — On October 15th, 1983 a perfect male *Herse convolvuli* L. was given to me that had been found by the proprietor on the window of his fish and chip shop in Park Road, Hythe, Kent. When handled the moth produced a lot of meconium and had probably only recently hatched.

Tony Rouse (6572)

Convolvulous Hawk in Oxfordshire — On September 6th, 1983 I caught a specimen of *Herse convolvuli* L. feeding from white *Nicotiana* flowers in my garden near Faringdon. It had been quite chilly the previous few evenings. When offered honey solution, the moth fed readily.

Steven Nash (7088J)

CORRECTION OF ERROR

In my book review of 'The Willoughby Gardner Library' (Vol. 42: p. 112), an unfortunate error occurred in that I stated (third line from bottom of page) the library was left to the University of Wales. This was incorrect. The library was left to, and is in the possession of, the National Museum of Wales, a completely separate institution. Apologies to Mr Kenyon and to the Museum.

Brian O. C. Gardiner

SHORT NOTE

Larvae in February and March — *Aristotelia brizella* (Treits) larvae hibernate in the flowerheads of *Armeria maritima* and *Limonium vulgare*. According to Tutt also in *Statice armeria*.

Larvae of *Monochroa arundinetelle* (Stainton) can on mild days be found in a long mine in the leaves of *Carex* species.

For those who like searching around on walls, mosses thereon should be carefully inspected for quite a number of overwintering larvae are to be found feeding whenever the weather is warm on various species of moss on walls. Mention may be made of *Bryotropa affinis* (Haw); *Pseudotelphusa scalella* (Scop.); *B. domestica* (Haw); *Olethreutes cespitona* (Hubn.).

Incidentally, while many species are quoted in the literature as feeding on mosses the actual moss species (of several hundred) is rarely specified. Plenty of opportunity here.

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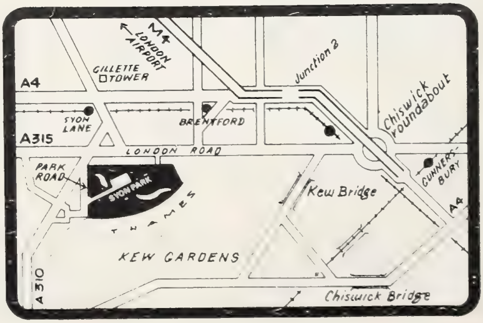

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AES
BULLETIN
No. 343

EDITORIAL

We report in this issue not only some failures of the Wildlife and Countryside Act, but also on some successes that have been achieved in London. We also have a clear account of the planning structure and how decisions are arrived at by one of our members who is involved in the planning process. One thing that does appear to be clear to us is that so long as habitat destruction is both known to be, and shown to be, profitable, then it will occur. A recent item on the television news reported that the Minister of Agriculture had returned a firm ''NO'' to a request that there be a rethink on farm price support policies. It has become more and more evident that it is these policies that are causing so much habitat destruction. Oddly enough, the refusal of Government to adequately fund the Wildlife and Countryside Act provisions and which is the main reason for its failings, is costing it very dear indeed. For by paying a fixed sum in compensation to save a site there would be an end of it. But by paying a subsidy to destroy (i.e. ''take into cultivation'') the site, which could amount to the same sum as the compensation and which *is available*, the Government is also then *commited to pay in addition* an annual subsidy for the crops (or livestock) raised on the site. At present this seems to be in perpetuity and we can only hope that the rising tide of opinion against present CAP policies will eventually lead to their abolition. In my last editorial I mentioned a case of habitat destruction in California. I have since heard that an organisation known as the Friends of Endangered Species is suing the US Fish and Wildlife Service for having granted building permits resulting in ''Incidental taking'' (=killing) protected butterflies.

FULL HOUSE FOR JUNIOR FIELDWEEK

Junior members have given the first ever AES Fieldweek an enthusiastic go-ahead. The week, based on "Lepidoptera in and around the New Forest" (28 July — 4 August) was originally planned for ten young people, but the response has enabled an increase to allow 14 to take part. Land Rover and tents should add some pioneering flavour to the event, along with expedition-style food prepared by Fieldweek members according to the 'Daily Grindsheet'. A full report will be published in the Bulletin in due course. . . .

Simon Reavey

WHILE FOR THOSE WHO PREFER TURKEY . . .

Systema Naturae is organising parties of from five to eight persons to collect in Eastern Turkey. The trips are of two or four weeks, by minibus accompanied by driver, cook, interpreter (Turkish, French, English) and entomologist who already knows the area. The joys of camping will be enhanced by nights in the luxury hotels of Istanbul, Van and Erzerum. Departure dates are 30 June; 14 and 28 July; 11 and 25 August, and are from Paris (or Istanbul). Price about £800. Full details from Voyages Bleus, 24 Rue de la Rochfoucauld, 75009 Paris.

UNDERSTANDING BASIC STATISTICS

This is the name of a course which Eaton Hall International (run by Nottingham County Council Education Department) is proposing to run for the benefit of Amateur Naturalists who wish to know how to analyse and present their observations. It will be a weekend residential course at a cost of £65. Dates to be fixed in relation to the amount of interest generated. Data brought by participants for analyses will be welcome. Will any members interested please write direct to John Perry, Eaton Hall International, Retford, Notts DN22 0PR.

CAPTIVE BREEDING AND CONSERVATION

I have been invited to present a paper on invertebrates at the Fourth World Conference on Breeding Endangered Species in Captivity, to be held in Rotterdam in September 1984. In my presentation I intend to emphasise the potential importance of captive breeding in the conservation of insects, arachnids, myriapods and other invertibrate groups.

I should be interested to hear from members of the AES, whether amateurs or not, who are breeding in captivity species which are threatened in the wild, or likely to be so in the near future. At the same time it would be helpful to have some idea as to how such captive propagation may be helping the species. It may play a part by reducing pressure on wild populations or, in some cases, by permitting the release of surplus stock into suitable habitats. There is, of course, a certain amount of controversy over the relationship of "collectors" to conservation but my thesis is that *bona fide* captive breeding programmes can contribute, both directly and indirectly, towards the protection of a number of species of invertebrate.

Any information or comments will be gratefully received and acknowledged and should be sent to me c/o The Royal College of Surgeons in England, 35-43 Lincoln's Inn Fields, London WC2A 3PN.

J. E. Cooper (2343)

HELP WANTED ON PERUVIAN BUTTERFLY PROJECT

I am a graduate student of entomology at the University of Florida. I recently had the opportunity to spend a month conducting field research at the Tambopata Nature Reserve located in the Peruvian Amazon. This area supports an incredible diversity of insects with over 1,000 species of butterflies having already been recorded. Regretfully, native villagers who live along the Tambopata River that borders the reserve, have been coming onto reserve land to hunt and to even cut trees to set up farms. This practice has already resulted in considerable damage. Although the reserve is officially maintained by the Peruvian government, in reality there are no personnel available to check and maintain these lands.

Myself and colleagues from the Smithsonian Institute have been considering the feasibility of setting up a butterfly farming operation for the natives. Such an operation has worked with varying degrees of success in other areas of the world. Although this area of Peru has many butterfly species desired by collectors, very little information is available on the foodplants of many of these. Only well studied groups like the heliconians appear to have published host plant records that are well known.

My purpose for writing is to request any information members of the AES might have regarding tropical butterflies and their foodplants. This could include citations of published manuscripts, unpublished manuscripts, knowledge from personal observations or experiences rearing tropical species, etc. Such information will greatly help this project and the initial evaluation of its feasibility.

James L. Castner
Dept. of Entomology and Nematology,
University of Florida,
Gainesville, Florida 32611, USA.

LETTER TO THE EDITOR

Dear Mr Gardiner,

There are one or two points which come from various recent articles. Firstly, in R. S. George's article on fleas, I noticed that he advocates the use of 'nipper' traps for small mammals. Perhaps it needs pointing out that the use of such traps where they may catch shrews is illegal under the Wildlife and Countryside Act. A permit from the N.C.C. is needed for catching these animals.

Secondly, in your editorial, you advocate the registration of objections to development of small areas of green belt land when planning applications are put in. While I agree that very often these areas harbour a rich wildlife, might I suggest that all too few naturalists take the trouble to make adequate records of areas of wildlife interest *before* any threat becomes apparent. If entomologists know of areas near towns which may be relevant under this proposed change in the law, they should set about documenting those sites in detail now and supplying the information either to their local biological records centre (often the local museum), or, failing this, to their local Trust for Nature Conservation. In this way a thorough knowledge of the most important sites, backed up by comprehensive information from all sources, can be brought to bear in any proposed landscape changes. Planning authorities will only take real notice of objections founded upon concrete facts, and perhaps rightly so, as otherwise no one would ever do anything.

Yours sincerely,
Trevor J. James

(Dr. George's article was written before the passing of the Act and Mr James' point does bring to mind the fact that the Act covers all living things, not just insects. For his second very relevant point see also article "Planning for Insects".—Editor.)

THE WIGAN ENTOMOLOGICAL EXHIBITION

More and more people have been asking whether additional functions of the Midlands Entomological Fair kind might be held each year as Brian Wurzell suggested in the last Bulletin. We in Wigan believe it to be the case, to judge from our Exhibition. The first two years have been highly successful, in spite of being missed by AES members. Brian's comments made me determined to bring out our publicity in time to catch the first edition of the Bulletin this year.

Our first Exhibition in 1982 was held at Wigan Teachers' Centre. All the rooms were filled, and it was clear that a larger venue was needed for 1983. Last year we used the Main Hall of the Technical College, which proved to be just right to accommodate the increasing numbers comfortably. Several of our exhibitors travelled a considerable distance so this year we have changed the venue again. Marus Bridge Middle School has been chosen because of its accessibility from other parts of the Country, being within a mile from Junction 25 of the M6 Motorway. The school has an "open plan" design. The Exhibition will occupy a reception area, which leads into a library, hall and dining room, with the possibility of using a drama theatre if necessary. The area has access to an enclosed quadrangle, which will allow us to have part of the Exhibition outdoors if the weather is suitable. The Date: Saturday 16 June.

Until now the event has been called "The Wigan Entomological Society Exhibition" but it very quickly outgrew the limits of the Wigan Society. It is *not* on the same scale as London or Leicester, but it has to begin somewhere. It probably runs a good third. What it loses in size, it gains in friendliness and informality. Our visitors comment on the good time they have had, and the new contacts and friends they have made. How many of us leave the London or Leicester Exhibitions feeling that we would have required the whole weekend to take it in fully?

I hope I have convinced you! We can provide a venue and tables, but *you* make the Exhibition. The date has been moved forward from May to June, further into the "breeding" season, so there should be a strong 'live' element at the show. We would particularly like to hear from exhibitors and anyone who would like to show a few slides. Please send a S.A.E. if you want more details, to Roger Swailes, 23 Dingle Avenue, Appley Bridge, Wigan, Lancashire WN6 9LF.

MIGRANT NOTE

Humming-bird hawkmoth in Cambridgeshire — At 8.20 pm on Friday, August 19th 1983, I saw a Humming-bird Hawkmoth feeding in my garden at Great Chishill, Cambridgeshire. The moth was hovering and feeding on Nicotiana and Valerian, although the border also contained Marjoram, Buddleia and Lantana. The garden is west facing. It was a warm clear evening with 0% cloud cover. Light was fair but fading fast.

The moth was netted for positive identification against continental cabinet specimens and R. South's *'Moths of the British Isles'*. The moth was identified by myself, and checked by my wife. After a period of approximately five minutes, for identification, the moth was released. The sex of the moth was not determined.

Colin G. Wright (7201)

COLLECTING HINTS

In addition to the methods mentioned in 'collecting Hints' in the November 1983 issue I wonder if any readers would be interested in grass trappings as an alternative. If grass cuttings are allowed to go mouldy in a paper sack for a couple of weeks and then put down in some suitable place such heaps will be found to be most productive of invertebrates — including many coleoptera.

I have only two small traps so far, both in a tiny deciduous wood at 850 feet in the Derbyshire Peak District, but have been very pleased with the results. I shall certainly increase the number and vary the distribution next spring.

The following species have all been taken from two quite small heaps (each one a haversack full) put down in early spring and inspected biweekly.

MAY: *Omalium septentrionis* Thomson; *Autalia rivularis* (Grav.)
Atheta aquatilis (Thomson); *A. brunneipennis* (Thomson)
A. cadaverina (Brisout); *A. cinnamoptera* (Thomson)
Oxypoda vittata Markel.

JUNE: *Omalium laticolle* Kraatz; *Quedius scintillans* (Grav.)
Atheta excelsa Bernhauer; *A. harwoodi* Williams;
A. laticollis (Stephens); *A. nigra* (Kraatz);
A. nigricornis (Thomson); *A. monticola* (Thomson);
A. trinotata (Kraatz); *Oligota picipes* (Stephens).

JULY: *Atheta amicula* (Stephens); *A. pallidicornis* (Thomson).

AUGUST: *Oligota punctulata* Heer; *Myllaena elongata* (Matthews).

Another habitat which can prove productive, although only temporary, is the mud left exposed at the margins of pools in periods of drought. The following species were all found in one day in July in such a spot on pastureland at 1000 feet, all were new to the local list although the area has been under survey for four years.

Bembidion obliquum Sturm; *Platystethus cornutus* (Grav.)
Stenus boops Ljungh; *S. canaliculatus* Gyllenhal;
S. fulvicornis Stephens; *Gabrius pennatus* Sharp;
Athena sodalis (Erichson).

I have also started to search grass tussocks on the fringe of deciduous woodland as described in the AES 'Coleopterists Handbook'. Although the following list is rather small (being restricted to those species new to myself) it is encouraging especially as this method seems to be productive even in thick frost. Species of *Carex* seem to be best particularly if the roots are reasonably dry.

> *Aloconata gregaria* (Erichson); *Atheta orbata* (Erichson);
> *A. xanthopus* (Thomson); *Meotica exillima* Sharp;
> *Bythinus macropalpus* Aube; *Tychus niger* (Paykull);
> *Brachygluta fossulata* (Riechenbach); *Barynotus squamosus* Germar;
> *Hypera suspiciosa* (Herbst); *Notaris bimaculatus* (Fabricius).

I am very grateful to the following gentlemen who have been kind enough to determine the more difficult species for me; Mr C. Johnson of Manchester University Museum; Mr P. M. Hammond of the British Museum and Mr H. R. Last of the AES Advisory Panel.

E. J. Smith (6580)

UNUSUAL SECOND BROODS

Two observations may be of interest to members, who may be able to offer suggestions behind the occurrences or add further observations along the same line.

On Sunday 12th June 1983, I collected a few ova of the Duke of Burgundy fritillary. All these hatched, fed up rapidly and pupated over a few days between 18th and 24th July 1983. Much to my surprise between the 1st and 10th August about 35% of the pupae emerged. This is considered to be a species that only has one brood in the northern part of its range.

Secondly, a dozen ova of White Admiral found in Savernake Forest again all hatched and the larvae fed well. They were found on the 24th July 1983 and all except three of these went straight through to pupation, five emerged as adults, the others failed to change successfully into pupae at the last moult. I still have the other three as minute larvae in their hibernaculae.

I can only assume that the very hot summer resulted in this rapid development and would be interested to hear of other similar cases.

J. D. Stewart (5875)

(Diapause may be obligatory or facultative. If the latter then it is controlled by both photoperiod and temperature. A detailed explanation is to be found in the Society's "Silkmoth Rearers Handbook". I think Mr Stewart is correct in assuming the very hot summer caused the normal diapause stimulae to be over-ridden. — Editor.)

PLANNING FOR INSECTS

If members find this article of no relevance to them either now or in the future then I will be one of the happiest authors ever to have contributed to the Bulletin. However, I fear that in months or perhaps years to come some of you will feverishly be searching through indexes to find it again. Well remember, it's called "Planning for Insects."

The Editorial in Bulletin 341 has prompted me to write. There, Mr Gardiner quite rightly expresses fear over the Government's proposal to relax the Green Belt policies in order to release land for development. I am happy to report that on the 23rd November 1983 the Environment Secretary was forced to bow to pressure from conservationists, farmers and local authorities and the draft circular which would have led to relaxation of controls was withdrawn. But beware, because it has not yet gone away but will reappear in the revised version.

So what can the entomologist do when he sees the earthmoving equipment moving earth, trees and hedges on his favourite "secret" habitat. The answer in short is— nothing. To beat the system you must understand it, and you must make your views known at the earliest possible date. Objectors to planning applications will, in most cases, be too late.

Let me outline the system. It exists on three levels and I will look at each in turn.

At the highest level is the Structure Plan. This will have been prepared by the County Council and will almost certainly be in force for your County. A copy should be available at public libraries. This document looks at broad proposals for the future of the County in fields such as housing, transport and industry. It is designed to act as a guide to the District Councils within the overall County. It will not identify with any specific sites, but might include a policy to the effect that District Councils should:—

> "Take into account the interests of nature conservation in all planning decisions relating to urban and rural use change."

The second level is the Local Plan, and this is the important one as far as habitat preservation is concerned. Although all areas of England are covered by Structure Plans, the Local Plans are only prepared for areas where the District Council feels that pressure for development warrants guidelines for future change. These Local Plans usually look at a town and its surrounding district, or perhaps a larger area that forms a single entity (such as the Tyne Valley to the west of Newcastle-upon-Tyne). Unlike Structure Plans, the Local Plan is specific with regard to sites.

Planners tend to be tidy creatures, and if they see a "gap site" (it could be a twenty acre field or more) it will almost certainly be identified for an alternative use in the Local Plan. In effect this designation gives a developer informal permission to build on it.

If you have a favourite site, ring up the Planning Department at your local Council offices and ask for the Local Plans Officer. Ask if there is a Local Plan in force in the area, and if not, is it anticipated that one will be prepared? These Local Plans cannot be adopted by the Council until full public participation has been undertaken. So if you see notices or press announcements make sure that you make your views known. One of the reasons that Planners have a bad name is because of the consequences of their actions in allowing land to be developed. But if expert members of the public do not tell them about specialist conditions, then Planners cannot be expected to know that a rare insect lives in a field that is due to become an industrial estate. Few planners are entomologists, but they are all anxious to gather as much information as possible before making an irreversible decision, and will take that information into account in the Local Plans.

At the third level is Development Control. This consists of a planning officer who has to determine applications for planning permission, and it is the part of the process that is most familiar to the general public. The Local Plan is the guideline on which all Development Control decisions are made. If the Plan states that an oakwood can be felled for a housing estate, then that will be what will happen, regardless of late letters of objection from entomologists who wish to save a Purple Emperor colony. You must therefore ensure that the Local Plan takes account of all factors that *you* feel are important. If there is no Local Plan in force, then an application may be determined "on its own merits". Objections to applications on the grounds that rare birds or plants inhabit a site are by no means uncommon, so do not worry about the planner thinking you a little odd if you wish to protect beetles as well!

In general the open countryside that we enjoy is not protected by Green Belt legislation. Only those areas of countryside surrounding major conurbations have this status. All other countryside could be at risk at any time, so it is your duty to be vigilant. I am not proposing that every entomologist should advise the Planning Department of his favourite sites, but if yours is surrounded by housing estates, and has been allowed to run wild for a number of years, then watch out.

If you know of land that is particularly important, then you should advise the local branch of the Nature Conservancy Council. I know of one case where a ten acre field in the heart of a residential estate was saved from development because a local botanist had identified 102 different types of grasses and advised the Nature Conservancy Council accordingly. They agreed that the site was of regional importance, made it a Site of Special Scientific Interest (SSSI) and included the land in a Local Plan as a nature reserve. The developer who owned the land, previously zoned for residential purposes was not pleased (although he will be compensated).

In conclusion, the relaxation of the Green Belt controls will lead to the built environment creeping into the countryside around London. Government legislation to this effect can overrule the approved Structure Plans which, in the main, all recommend that Green Belts should be retained and often state that their size should be increased. But open countryside everywhere could be under threat and it is our responsibility to ensure that the decision makers are aware of all the facts before any is released for development.

When I was a boy I spent several years collecting in a field close to home which was overgrown and teeming with Skippers, Elephant hawk larvae, Chimney sweeper moths, and (in 1966) one Clouded yellow. If I knew then what I know now as a professional planner I would have realised that the land was not left wild for butterflies, but because a developer was struggling to obtain planning permission from the Council. He eventually succeeded and a small estate now sits on the land. I didn't tell the Planning Department about the interesting insect life in the field and they therefore made their decision without being aware of it. I would not make the same error now, some twenty years later; and have been involved in a scheme to develop some waste land in Northumberland where a colony of Large skippers (rare in the County) have been moved to alternative premises that are not threatened.

I have heard that for each human being there are 200 million insects in the world. They do not have a vote or the right to speak, so it is up to us to speak on their behalf.

Before the next season is upon us, might it not be an idea to check with the Planning Department to see if insect habitats could be affected by development? If you are unfortunate enough to be told that the answer is "yes", then I would be pleased to offer advice to both the entomologist and to the local planning officer concerned about how a mutually satisfactory conclusion might be reached.

Nicholas Cook (7777)

(The Editor thanks Mr Cook for his kind offer of help.
His address is 61 Piper Road, Ovingham, Prudhoe, Northumberland NE42 6AZ.)

SECOND ANNIVERSARY OF WILDLIFE ACT — NO CAUSE FOR CELEBRATION

Twenty-seven wildlife organisations have issued a major report which condemns the government for failing over the last two years to stop what is says is catastrophic loss and damage to Britain's vital wildlife habitats by detrimental activities including agricultural and forestry operations.

'The Wildlife Link Habitat Report' criticises the government for failing to protect 89% of Britain's key sites, known as Sites of Special Scientific Interest — SSSIs. The Wildlife and Countryside Act came into force in November 1981. Since that time, less than one in nine existing SSSIs have been protected by the new procedure of notification.

The government's latest estimate is that it will take at least another two years for the Nature Conservancy Council (NCC) to complete renotification. The voluntary wildlife bodies issuing the report disagree. They estimate that it will take considerably longer because of NCC's lack of resources and manpower. Already in the six months between October 1982 and March 1983, government ministers' estimates of the completion date have changed from March 1983 to early in 1985.

Meanwhile the report states that wildlife habitats will continue to be damaged because

★ until the SSSIs are renotified they can be damaged or destroyed without the NCC even knowing about it;

★ with renotification, awaiting SSSIs have virtually no protection from damaging activities;

★ any new areas that should become SSSIs will go to the bottom of the pile so delaying for many years their legal protection.

The report, accompanied by a map, illustrates 22 examples of SSSIs from Cornwall to Scotland that have been damaged since November 1981. It has been discovered that in Norfolk, 22 out of a total of 115 SSSIs have been damaged or destroyed in the two years since the Wildlife and Countryside Act was passed. In Northamptonshire, in the same period, six SSSIs out of a total of 44 have been damaged or destroyed, along with six out of 22 proposed SSSIs.

Lord Melchett, Chair of Wildlife Link, says 'Wildlife organisations feel badly let down by the government as Britain's vital wildlife habitats continue to be destroyed through the inability of the NCC to implement the Wildlife and Countryside Act'. Stanley Johnson, Conservative MEP and Vice-Chair of Wildlife Link says 'Ministers must act now to provide the NCC with the necessary staff and resources to save these irreplaceable wildlife habitats, before more SSSIs disappear under the plough'.

Copies of the Report are available from Wildlife Link, Unit 22, Finsbury Business Centre, 40 Bowling Green Lane, London EC1 0NE, for the price of £1.50 inclusive of postage.

habitat

HAT TRICK FOR NATURE CONSERVATION IN LONDON

1983 was a good year for nature conservation in London. Three public inquiries were won which provide significant precedents in the field of urban nature conservation. The first was Frays Nursery, a small area of abandoned market gardens with derelict greenhouses adjacent to the River Frays in West London. A proposed housing development was approved by the local Borough (Hillingdon) but opposed by the GLC on the grounds that the site was adjacent to Green Belt, allocated for open space use in the Initial Development Plan, and that it had considerable potential value for future conservation.

The GLC demonstrated that the site was part of a belt of riparian open land along the Colne and Frays rivers and that it provided a great deal more habitat diversity than other sites within the predominately residential land elsewhere in the Borough. The GLC argued that the site had considerable potential for use by local schools and that it should be managed as a local nature reserve. In making his decision, the Inspector supported the possible use of the appeal site as an ecological centre, pointing out that 'once the majority of the land was given over to housing then that opportunity would be lost for ever'. This is a significant precedent in that the conservation arguments were largely based on the potential value of the site rather than on the merits of the present wildlife content.

The second case was the more widely publicised Gunnersbury Triangle, a seven-acre plot of unused British Rail land in Chiswick left virtually undisturbed for 40 years, and gradually colonised by birch and willow woodland. Local residents formed a Chiswick Wildlife Group in 1982 and mounted a vigorous local campaign for the conservation of the woodland. As as result the Borough refused planning permission for warehousing, but BR and Lovell Developments Ltd jointly appealed. The developers argued that the site was not of great significance as virtually all the species occurred elsewhere within the local area and that the site did not rate highly in terms of size, species richness, diversity or naturalness. However, they conceded that the triangle was of local significance. Dr David Goode of the GLC argued that the triangle had much value as an educational resource, and was a source of inspiration for local people. The Inspector considered that these points were so important that planning permission should not be granted.

The third case was a Local Plan Inquiry concerning Crayford Marshes in Bexley. In its draft local plan the Borough proposed that most of the area should be converted to housing and industrial use. The GLC objected because the land was not only Green Belt but also had considerable nature conservation value. Crayford Marshes are one of the few remaining examples of grazing marsh in Greater London and still contain the characteristic fauna including breeding redshank and yellow wagtails. The arguments used in this case were more traditional, relying heavily on the intrinsic merits of the site, but it is significant that the proposed development was not opposed by either the NCC or RSPB since the marshes are only of local significance.

All these cases were local issues. None merited SSSI status, and the inquiries were won because of the value of such places in the urban context. It is salutory to realise that comparable sites in the wider countryside, such as rapidly diminishing wild life corners within the agricultural landscape, equally valuable to local people, do not have equivalent protection within the planning process to ensure their survival in the face of agricultural improvement.

habitat

RARE LEICESTERSHIRE BUTTERFLIES

In addition to the Clouded Yellow butterflies reported, two rare sightings for Leicestershire were a Purple Hairstreak (*Quercusia quercus* L.) and a White Letter Hairstreak (*Strymonidia w-album* Knoch) both at Burbage Woods on August 14th. A possible Silver-washed fritillary (*Argynnis paphia* L.) may also have been present, again an unusual record for this part of the country.

Ray Morris (7558)

GATEKEEPER IN NOTTINGHAMSHIRE

The Gatekeeper or Hedge Brown (*Pyronia tithonus* L.) was sighted in many new localities in Worksop. Its distribution is spreading rapidly and a local record keeper confirmed its spreading into new areas of Nottinghamshire. I recorded great numbers of this species from a locality where only one year ago in 1982 I saw not one!

Other interesting species confined to the Sherwood Forest area also had a boom year. Perhaps in the near future more exciting species will expand their range into the area. This is likely but we shall have to wait and see.

B. Keywood (7922)

RARE TORTOISESHELL VARIETY

It may be of interest to mention that I had the good fortune in September 1982 to enjoy the sight of a perfect specimen of *Aglais urticae* ab *nigra* (Tutt) sunning itself on a clump of michaelmas daisy. I was incapacitated at the time with a bad back, so was unable to do much about it, although, if I had had my wits about me, no doubt I could have got a photograph of it. It was the first one I had ever seen and undoubtedly the last! I was sitting on a divan on the lawn at home and was able to study it for some ten minutes.

David Gaunt (5660)

FEATURED MUSEUM NUMBER TWO — HEREFORD CITY MUSEUM

The insect collections at Hereford City Museum are not very good, consisting largely of the Algernon Chapman collection of British Lepidoptera and an assortment of various Orders collected by the present Keeper of Natural history. As with many older collections, the Chapman material lacks data, a great pity as there are some rare species represented, but from where they came, nobody knows.

With limited funds and resources it is difficult to build up representative collections of all Orders, so field collecting is largely confined to the Coleoptera, and certain sections of the Diptera and Hymenoptera in an effort to amass representative material of these groups and to go some way to finding out what actually occurs in this still very rural but entomologically neglected County. A data bank has been set up recording on the 2 km square (tetrad) basis and it is hoped to produce some form of Lepidoptera List in a few years.

One of the most notable entomologists to have resided in the County was Theodore Wood, a doctor of medicine from Tarrington. He is perhaps best remembered for his work with the Diptera, especially the Phoridae, but Lepidopterists probably recall the name from, *Celypha woodiana*, named after its captor. Alas, Wood's collections passed to the British Museum (Natural History).

Much field work is carried out in cooperation with the Nature Conservancy Council, especially with regard to statutory sites — Moccas Park, Downton Gorge or The Flits for example. The County is in many ways behind the times, with the terrible farming practices and canalisation of rivers and streams one sees in East Anglia not being adopted here. With land rising to over 2000 feet, many ancient woodlands and parklands, numerous traditional hay meadows, old orchards, interesting wet-land, and wooded river valleys. Herefordshire is exceptionally rich in insects, but very under worked. Any member thinking about visiting this area would be made welcome at the Museum, and the Keeper would willingly suggest interesting areas to visit, or point out places that are entomologically ''unknown'' with the possibility of significant surprises awaiting discovery. With only a half dozen resident entomologists, there is great scope for the visitor.

Accommodation and camp sites are good, and a list can be supplied upon request.

Jonathan Cooter
(Keeper of Natural History)

THE 1983 CLOUDED YELLOW INVASION

My appeal in the November Bulletin last year for information on any Clouded Yellow butterflies (*Colias croceus* Geoffroy) seen, has brought in an encouraging number of replies. These are reported below. It is quite clear that there was as large migration of this butterfly in 1983 and undoubtedly it bred here until destroyed by the late autumn frosts. I have assembled the various accounts sent to me under Counties, in alphabetical order. This has meant splitting the accounts of the more mobile members who made reports from widely separated places. I have also taken out notices of other species reported at the same time and these are noted separately, not necessarily, however, in this issue of the Bulletin.

Editor

IN BERKSHIRE

In reply to your request in the November last Bulletin. While walking on the Ridgeway on the 12th of August (1983) between Streatley and Blewbery, I saw two Clouded Yellows, one male the other female. They were about half a mile apart and both were in very good condition. This species is not new to me as I have seen it many times before in Switzerland, but this is the first time I have seen it is England.

Christopher Raper (7540J)

IN CHESHIRE

I was fortunate to see two specimens of the Clouded Yellow on the 15th August near Warburtons Wood (Cheshire Conservation Trust SSSI) in Cheshire. I obtained eight good photographs of the butterflies as they fed on knapweed.

Dr J. A. Daniels (6886)

IN CLEVELAND

During last year's summer I recorded the following Clouded Yellows in Cleveland:

13th August — 2 seen in Guisborough
21st August — 1 caught at Redcar
26th August — 1 in Park Wood, Guisborough

N. W. Harwood (825)

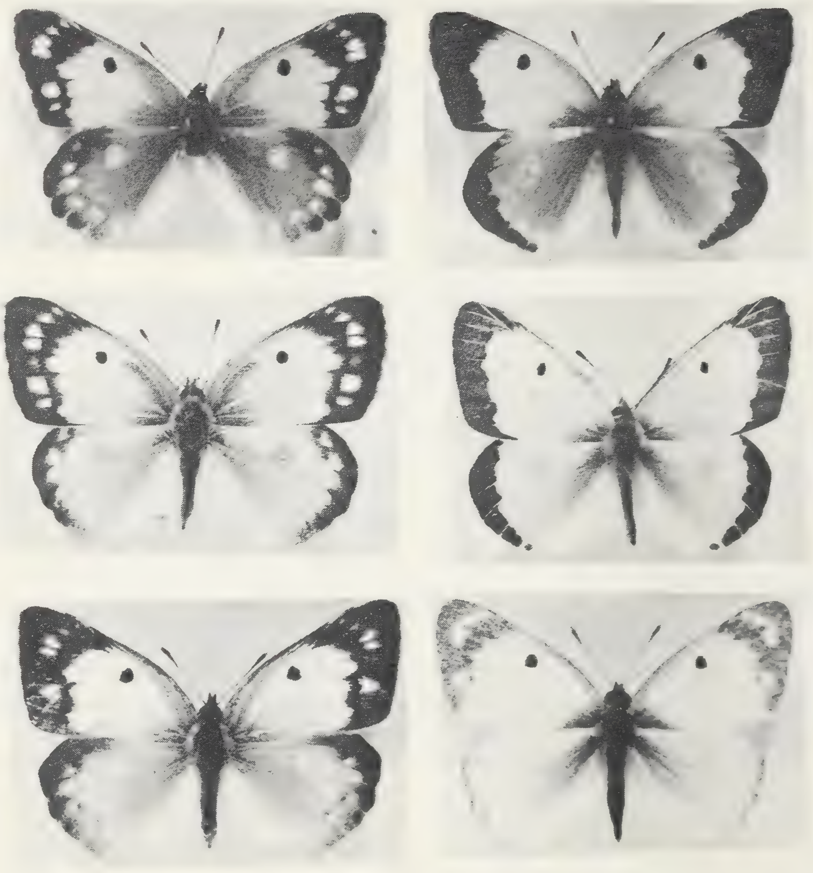


Fig. 5. Clouded Yellows: males on right, females on left. Top, *Colias croceus*. Middle, *Colias eurytheme*. Bottom, *Colias hyale*.

Photo: Francis Pang

IN CORNWALL

Whilst on holiday in Bude, Cornwall, from 20th August to 3rd September, quite a few sightings of Clouded Yellows were made in this area. The following confirmed specimens were collected and examined:

21st August —	Two females — one a typical yellow and the other the white form *helice*. Both at Sandymouth Bay, north of Bude.
23rd August —	One female — the yellow form, at Sandymouth.
25 August —	One male — at Sandymouth.
27 August —	One male at Widemouth Bay, south of Bude.

On several other occasions both sexes were seen feeding on a patch of wild flowers at Sandymouth amongst large numbers of other feeding butterflies, including a number of Painted Ladies, Red Admirals and Peacocks.

J. D. Stewart (5875)

I am writing in response to your plea for reports on the Clouded Yellow. I spent the second and third weeks of August 1983 travelling along the south Cornwall coastline, between Plymouth and Lands End. During this time I saw well over one hundred Clouded Yellows and a dozen or so pale Clouded Yellows (*Colias hyale*). All seemed to be in fresh condition. Having seen these in such comparatively large numbers I am surprised more members have not submitted reports.

P. Schofield (6075)
(Could these *hyale* have been *helice*?—Ed.)

Whilst on holiday last year in July at Bude in Cornwall I was able to go collecting along the Coombe Valley. Initially hoping to collect micros my notice was taken by a *C. croceus* imago feeding on a thistle. This was in fact only one of 50 observed that day. With the help of Katherine Mortimer we were able to accumulate 33 specimens comprising of 16 males and 17 females. Two of the females were the form known as *helice*. It was noted that between 11.00 am and 12.45 pm only males were noted, the females flying at about 1.00 pm along with the males.

The whole colony was restricted to a small field of clover surrounded by high hedgerows and substantial shelter was offered by the steep sides of the valley.

I recorded five *helice* in all, that week, and am deeply grateful to Ms K. Mortimer's help in the field.

P. A. Cross (7430)

IN DEVON

Whilst playing golf with my wife at Saunton Golf Club near Braunton, North Devon, on 22nd July, we noticed male Clouded Yellows flying across the fairways.

The next day, a female fluttered around the first green, and further males were seen all over the area. A day or so later, I took a portable net, and whilst addressing my shot, a female settled close by. I got out the net and captured it. Thereafter it laid on potted lucerne in my cottage garden.

Every time we played golf, many of these butterflies were seen, particularly in an area around the first three fairways.

My family also observed single specimens around the district of Croyde — Barnstaple.

The eggs hatched, and next month when the larvae were about 3rds I brought them into the house, placing them in a bay window. The next day they were all dead, lying on the window-sill. I was baffled until to my dismay realised that a 'Vapona' insecticide lantern was hanging from a beam overhead!

M. H. Edmonds (3821)

IN DORSET AND SOUTH WILTSHIRE

In response to your appeal concerning the appearance of the Clouded Yellow butterfly during 1983. The following may be of interest.

During the period May 23rd and October 4th I recorded 121 sightings of the Clouded Yellow. The area of observation was restricted to Dorset and South Wiltshire. August 8th proved to be the most abundant; on this day I made 42 sightings. However, one could not guarantee that they were all different individuals. The female form *helice* Hubner was noted at:

Alvisdiston, Wiltshire — July 29th

Spreadeagle, Dorset — August 8th

Mere Downs, Wiltshire — August 12th

During the period July 4th and 19th I was in France. *Colias croceus* did not appear at all numerous. A build up of numbers was noticed in Eastern Brittany during the period July 17th-18th. I did not make any record of individual sightings.

G. D. Trebilcock (2976)

IN ESSEX

With regard to your request for further reported sightings of the Clouded Yellow this year, I saw a male specimen on 29th July 1983 at 10.15 am flying through the Harold Hill Industrial Estate in Essex. It was a fine sunny day, with the temperature already in the 70°s F. at this hour of the day.

It is interesting to note that the reported sighting by C. J. Gardiner in Basildon, is 10 miles due east, and a straight line can be drawn on a map between Harold Hill, Basildon, and the nearest place on the east coast to both these places, i.e. Shoeburyness. The distances between these places is as follows:

Shoeburyness — Basildon, 15 miles
Basildon — Harold Hill, 10 miles
Shoeburyness — Harold Hill, 25 miles

Unlike the sighting in Basildon, this sighting was in the middle of an industrial estate, which is surrounded by a housing estate, and this specimen would have had to travel further inland to find a suitable breeding site.

D. A. Crome (6896)

IN GLOUCESTERSHIRE

On Friday 19th August 1983, whilst walking through open grassland below a steep hillside rising to a crag called Cleeve Cloud, not far from Cheltenham, three sightings of Clouded Yellows were made. This may have only been two individuals but there is no doubt about their identification since one was observed for several minutes flying around a rocky slope and the other momentarily landed on the ground a few feet away. It was a very warm and sunny day.

J. D. Stewart (5875)

In Gloucestershire, where I live, I made the following observations of Clouded Yellows during last summer. Sightings on 27th July, captured two females on 30th July. On 12th August males were common and many seen in the following week. Further sightings on 1st September, 7th September, and on 22nd September more males were seen on a local disused railway line. Fresh specimens were taken on the 2nd and 5th October and bred specimens which had been kept outside were emerging up to the 22nd October.

Dominic Rey (7920J)

IN HAMPSHIRE

On 3rd November last at Gosport on a warm and sunny day, a male Clouded Yellow was observed. It was in a rather torpid state but superbly marked and in first-class condition.

J. H. Smith (6543)

Last year I made the following personal observations on Clouded Yellows:

12th June	Female feeding on *Aubretia* in a garden at Cheriton. Later in the day another was seen in Arlesford town.
1st August	One male and a female *helice* seen feeding at Stockbridge Down.
3rd August	Male feeding at hawkbit in garden at Cheriton.
10th August	Two flying across garden at Cheriton.
14th August	One flying over garden at Cheriton.
22nd October	One fresh example flying over garden at Cheriton.

B. R. Stallwood (1547)

IN HERTFORDSHIRE

Last year I raised ten newly hatched larvae of the Clouded Yellow which had been sent to me by a fellow member, who had found a colony breeding near Barnet. These I fed on common vetch and obtained seven females and one male, but was unable to continue the brood due to a quite cold spell in early September.

Robert F. Collins (6857)

Exactly one week after sighting my first Clouded Yellow at Brighton, on 21st August, I saw a single male, in fine condition, at Royston Heath (North Herts) on heathland in association with Chalk-hill blues and numerous Brown Argus. Conditions were sunny.

Dr Stephen Williams (7596)

IN HUMBERSIDE

On August 6th 1983, in the company of my wife and father,I observed a specimen of the Clouded Yellow in the garden of my parents' house at Cleethorpes, South Humberside. The butterfly, which appeared to be in good condition, settled briefly on an orange-yellow gazania flower before flying off strongly over the rooftop of the bungalow. For an instant, I almost did not react to the sight because its North American congener, *C. philodice* Godart, is a common species in grassy places here in Montreal, where I now live.

Lawrence Annable (6854)

ON THE ISLE OF WIGHT

'While on holiday in Ventnor last year, I was interested to see, both in the Botanic Gardens and along the nearby cliff paths, quite a number of Clouded Yellow butterflies. These were restless butterflies and I was unable to catch one at rest and so get a good photograph. Towards the end of the holiday I picked up in Steephill Road a female butterfly that had apparently been struck by a car. Thinking it would have to do for the photograph I took it back to our hotel. After photographing, and before it died of its injuries, a few eggs were laid. I successfully reared some of these. I then wrote a rather expanded account of the above to the Isle of Wight Mercury and my letter was duly published by them on 7th October, 1983. The letter was written to find out, if possible, if there were any second brood Clouded Yellows on the wing around Ventnor in early October. I had several letters telling me that there were fresh butterflies on the wing at that time, especially in the Niton area of the undercliff.

My pupae produced butterflies successfully, and I was able to get the photographs that I wanted. But echoes of that letter in the Mercury linger on. I don't know how other papers got hold of it, but the Bath Evening Chronicle published their version of it under the heading of "Cloud Nine". Later, the Wiltshire Gazette printed it, and oddly I thought, the News of the World printed the story under the heading of "Winning His Wings". I had the honour of sharing a page with "The Vicar and the Virgins"—a point not neglected by my workmates.

This gives me the distinction of being the only member of our family to get a mention in the News of the World! I thought this little tale may be of interest to members.

Arthur Cleverly (7265)

IN KENT

Hoping for sightings of *Colias hyale,* we visited Kent on 15th August. We traversed the whole South-East area between Margate and Lympe, and found not even a single lucerne or clover field. Returning via the Isle of Sheppey, we found one stunted lucerne field, and in it a lone female *Colias croceus helice.* The heatwave was terrific, but broke three days later.

M. H. Edmonds (3821)

How pleasing to read, in the November issue of the Bulletin, about the Clouded yellow observations at Ivinghoe and Basildon.

I have also recorded this beautiful butterfly, during 1983, in the following areas.

Hildenborough, Kent, TQ 57 47, on 12th June. A near perfect specimen was observed in my garden.

Leigh, Kent, TQ 56 46, on 24th August. A rather worn and damaged specimen was seen on waste ground.

A. V. Measday (3917)

IN LEICESTERSHIRE

Clouded Yellow butterflies were sighted in South-West Leicestershire during the summer of 1983 at Kirby Muxloe (29th June), Shenton (1st August) and Burbage Woods (14th August).

Ray Morris (7558)

IN LINCOLNSHIRE

On the 8th August 1983 whilst on a field trip and responding, rather sceptically, to vague references to the sightings of yellow butterflies by friends walking their dog, I happened upon a small colony of Clouded Yellows. Eight to twelve specimens were seen by me flying strongly along a two mile stretch of Ermine Street, a Roman road now forming part of the Viking way, which runs very near my home in Cranwell, Lincolnshire.

Although clover, millet and birds-foot trefoil are to be found along the track no other stages were observed even after peresistent searching by myself. I did manage to capture three specimens, alas all males.

L. C. Morgan (6822)

IN MIDDLESEX

I would like to report the sighting of a Clouded Yellow butterfly on the 19th August 1983. It was spotted in a field on Royal Air Force Northolt in mid morning.

A. J. Steer (7374)

IN NOTTINGHAMSHIRE

I am writing for the first time to mention a few interesting notes about my lepidoptera recording year of 1983.

As I am sure, members know 1983 was a marvellous year for butterfly migrants. Where I live in Nottinghamshire there was no exception and many interesting species were discovered in the areas around Worksop and Rotherham.

The main attraction was of course the Clouded Yellow, which arrived in the north of England in great migratory swarms. For the first time since 1947 they were spotted in this far north area of the country. I myself visited as many likely spots as I could to see and record specimens myself. After reading in the 'Rotherham Star' about the migrants, and reading up about the species' habits, I was quick to visit all of the spots I knew where trefoils, clovers and leguminous plants grow.

Altogether, eight records were made from Worksop and the surrounding area and by accident I stumbled upon a torn and battered male Clouded Yellow on some allotments in Wickersly, Rotherham.

Most of the records were taken from the area around my house at Larwood Golf Course, Worksop. Here small leguminous plants provided a marvellous source of nectar and foodplant for the yellows. All seen here were again male specimens but were in a surprisingly good condition.

B. Keywood (7922)

On the 7th of August 1983 I encountered a colony of Clouded Yellows alongside a dried up stretch of the old Grantham Canal at Cropwell Bishop, Nottinghamshire and three miles away along the grassy banks of a disused railway. Several typical specimens of both sexes were noted. The particular locations had an abundance of Clover and Birds-foot trefoil and the adults seemed particularly attracted to the flowers of Ragwort.

One female taken on the 8th laid approximately 20 eggs, singly, on Clover provided. The caterpillars hatched beginning 15th August. These, to begin with, were pale yellow/green and lay motionless down the centre of the clover leaves.

By the time they were fully grown (measuring approximately 28 mm) the only two survivors were bright green with fairly distinct orange and black dots at intervals along their sides below a yellow line.

Both larvae pupated during the week commencing 26th September. The pupae, held in position on stems of grass by a silken "girdle" and a silk pad at the end of the abdomen were pale green with dark brown markings on the abdomen.

Both imagos hatched indoors on 23rd October, one male, one female, and both typical forms. I had hoped that pairing may take place and provided growing food plants and plenty of Ragwort but although the male lived for one week and the female for two, no pairing took place.

1983 appears to have been a "bumper year" for Clouded Yellows and it will be interesting to plot their diversification based on other members' reports.

David Cordon (6169)

IN STAFFORDSHIRE

On July 30th 1983 while on a collecting trip to Park Hall, Staffordshire, on a very warm sunny day, I came across a Clouded Yellow butterfly. It was quite a pale colour, and a handsome looking butterfly, so I took it. The next day I took it to show Mr R. G. Warren, the county lepidoptera recorder. He said it was the first *helice* he had seen in Staffordshire. He also said that this variety has been recorded very few times in Staffordshire. This specimen is now in his collection. In Staffordshire this year Clouded Yellow has been recorded from all over the county.

Areas where I have recorded it are Barlaston Rough Close Common; Moddershall; Normacot. Also one in my garden at the Meir, all these were the typical form. In the *Atlas of the Lepidoptera of Staffordshire* the Clouded Yellow records are very scarce. In the Victoria County History *helice* was recorded once near Stafford. Also recorded at Forton swarming in September 1941 including var. *helice* by Rev. E. S. Lewis, and also recorded in 1947 and a few in 1949, by the late H. W. Daltry, FRES. In the great migration year of 1947, however, it was seen everywhere. Very few records have been reported in the county, the last at near Burton in 1963.

I would like to thank Mr R. G. Warren, the author of the *Atlas* for these records. No doubt 1983 will go down as a Clouded Yellow year in most parts of England.

Jan Koryszko (6089)

Clouded Yellow in West Midlands — On August 14th, 1983, a hot dry day, I spotted a male specimen of the Clouded Yellow (*Colias croceus*) which was flying around a large patch of Hawkweed situated along the disused GWR West Bromwich — Wolverhampton railway line that is now a public walkway. Although I searched a considerable time no other specimens of this species were found.

Lionel E. N. Smith (6915)

IN SUFFOLK

According to many reports I have heard, 1983 must have been a good year for the Clouded Yellow. I saw one in a park on 6th June at Oulton Broad, but it flew off across the river before I could determine its sex.

Robert F. Collins (6857)

IN SURREY

As well as the Clouded Yellows seen in Kent, I have the following records from the adjacent county. Box Hill, Surrey, (TQ 17 51) on 5th August 1983. A slightly worn specimen was flying along the lower hillside. Betchworth, Surrey (TQ 20 52) on 5th August 1983. A very good specimen was observed near a quarry area.

A. V. Measday (3917)

At the late date of 19th October last I saw a fresh looking male Clouded Yellow at Merstham.

Robert F. Collins (6857)

The summer of 1983 appears to have been an excellent one for the Clouded Yellows. During my weekly two mile walk on the chalk-downs of Surrey conducting a butterfly population count, the Clouded yellow appeared frequently in July and August.

Butterflies were counted, when visible, within six feet on either side and in front while walking the same path weekly.

Clouded Yellow numbers were as follows:

16th July	—	1
23rd July	—	0
30th July	—	19
4th August	—	8
13th August	—	5
23rd August	—	0
27th August	—	1
		——
		34

BRIT. MUS. (N.H.) ENTOMOLOGY LIBRARY

Mean July and August temperatures were higher than usual, between 25 and 31°C during the count. No sightings of the Pale Clouded Yellow or of the white form var. *helice* were recorded.

The last sighting of the year was at the RHS Gardens at Wisley on 23rd October by my wife.

J. A. D. Smith (5438)

IN SUSSEX

In response to your request regarding sightings of Clouded Yellows (November 1983 issue) I noted with great delight seeing my first ones in this country, this year.

Two specimens. one perfect female, the other undetermined. were seen on cultivated grass about 100 yards from the beach at Brighton on 14th August 1983 (conditions were hot and cloudless).

Dr Stephen Williams (7596)

I have seen quite a few Clouded Yellows, 1983 being the first time I have ever seen any.

The first butterfly which was a male, was seen flying in a neighbour's garden in Heathfield, East Sussex, on 30th July. The following day, on a stretch of waste ground near where I live, I saw five males and counted more in the following weeks. I also saw one flying along the road in

Ashdown Forest and a few were seen in Longrope wood near Ashford, Kent on the 6th August.

I reared 56 butterflies from eggs and released these into the garden, which was a nice sight. The last butterfly emerged on the 29th September.

P. Farrant (6488J)

IN WARWICKSHIRE

I saw specimens of the Clouded Yellow at Frendon Common on 21st August last year.

Ray Morris (7558)

IN WILTSHIRE

See under DORSET.

IN YORKSHIRE

I can report two sightings in 1983 of Clouded Yellows. The first, a male, was sighted at Westbridge, near Pontefract, on 8th June. The second, a female specimen, was sighted in the writer's own garden, at Pontefract, on a broccoli plant on 2nd October. I have lived in the Pontefract area all my life and for 25 years since a youngster observed and collected lepidoptera and never before seen specimens of *croceus* in the area. Both examples by the way were in good condition.

M. W. S. Walters (6333)

On Monday 22nd August last year I was travelling 2½ miles north east of Stamford Bridge about ten miles east of York. While riding between two cornfields a Clouded Yellow flew across the road directly in front of the car. Now, having observed butterflies for 20 years I have never before seen a Clouded Yellow. Quite naturally I did an emergency stop and got out to investigate.

To my delight and amazement the cornfield to my left had been left untouched by selective weedkillers and had clover growing profusely everywhere among it, especially the first 20 feet margin where the corn seed had fallen thinly. Flying only over this field, never straying far from it, were up to two dozen Clouded Yellows. The funny thing being, however,was that all those observed close enough were males; no females were identified. On return five days later, the same thing again — only males seen.

After riding round this area looking for more specimens, none were seen. In fact, this particular field appeared to be the only one in a radius of about 50 square miles, ideally suitable with abundant clover growing untouched among the corn.

Leslie Northern (6586)

Whilst shooting on Bowes Moor, adjacent to the A66 Scotch Corner/Penrith road, on Saturday 13th August, I was surprised and delighted to see a Clouded Yellow. It must be some twenty years since I last saw one in Yorkshire.

David Grant (5660)

During 1983 I recorded a number of Clouded Yellows in North Yorkshire as follows:

22nd August — 11 in a clover field at Thornton Dale.
5 of these were netted and all were males.
20th August — 6 in a limestone quarry near Pickering.
25th August — 5 at Ellerburn Banks.

I have had other reports of sightings from various places in Yorkshire during July and August.

N. W. Harwood (825)

At Anston, South Yorkshire, I recorded three Clouded Yellow specimens and I heard of a pale *helice* variation which had been sighted here. Unfortunately, I did not see any myself.

B. Keywood (7922)

Clouded Yellow in Yorkshire — I should like to report the sighting of a perfect specimen of *Colias croceus* Fourcroy on August 13th, 1983. It was seen feeding on thistles in the early afternoon on Strensall Common, a large area of lowland heath some seven miles north-east of York. It was a hot sunny day with virtually no breeze.

P. Kirk (6608)

OBSERVATION

Typical "Peppered Moth" *(Biston betularia)* — Although I have read that the black and white "speckled" form of *Biston betularia* is the norm and the black form is in the minority I find it interesting that the majority of specimens that I have taken at light in the Nottingham area have been the black form. The only "speckled" specimen that I have caught was on July 9th 1983 in my garden at Cropwell Bishop, Notts.

One further point of interest on this subject is that in a book dated 1918 and entitled "Butterflies shown to the Children" the species is referred to as the "Pepper and Salt Moth".

David Cordon (6169)

(Apart from Rennie in 1832 calling it the "Spotted Elm moth" the books from then onwards seem about equally divided between "Peppered" and "Pepper and Salt" moth — Editor.)

BUTTERFLIES IN NORTHERN YUGOSLAVIA

(Continued from page 38

8. *Cres* (29 species, abundance index 66)

At the end of July 1981 we camped for a week by the Adriatic on the island of Cres in Croatia. The heat was so oppressive that we spent a good deal of our time in the sea. Also there were very few paths which allowed one to penetrate the dense Mediterranean scrub-oak vegetation on this 30-kilometre long island. My butterfly watching was done mainly on abandoned, walled fields previously used for sheep grazing and on an adjacent marshy area with brambles and planted poplars by a narrow inlet of the sea.

Both *bellargus* and *icarus* blues were common in the walled fields and *P. argus* was locally abundant. I found several colonies of *Spialia orbifer* and a single *Pyrgus onopordi*. Along shady lanes, *L. reducta*, *P. aegeria* and *L. sinapis* were numerous and I identified one *L. duponcheli*. Around the patches of bramble and marjoram were *P. egea* and an abundance of *P. cecilia*. Close by I found a few *P. tithonus* and *L. megera* were plentiful.

It is often interesting to consider the species which are not found on an island by comparison with the mainland. For instance *H. lycaon* was present, but no *M. jurtina*. The only *C. pamphilus* I saw had six conspicuous sub-marginal ocelli on the underside of an otherwise largely unmarked hindwing, suggesting a subspecies similar to *C. p. thyrsis*; though there may be some other explanation. The more common species of skipper were absent, so too were fritillaries, apart from a few *M. aglaia* and, on a buddleia bush at Porozina, on the north end of the island, about 15 specimens of *A. paphia*.

9. *Jacje* (36 species, abundance index 93)

This mediaeval town and former capital of Bosnia is the furthest south I got in Yugoslavia. My observations of butterflies there are included for comparison with places in the north. We camped on marshy ground by a lake (350m) outside the town for the last two days of July 1981. A male *L. dispar* was in attendance while we pitched our tent. On a dry flowery slope nearby, *A. agestis*, *P. icarus*, *P. argus*, *L. bellargus* and *L. coridon* blues were plentiful, as were *E. tages* and *P. onopordi* skippers.

The beauty of the castle, minarets and waterfalls of the town was marred by a pall of industrial smoke and we gratefully escaped to the cleaner air of the surrounding hills. Here *A. paphia* and *M. aglaia* fritilaries were fairly numerous and we also found *H. fagi* and a huge female *Minois dryas*. Two other species on the edge of their

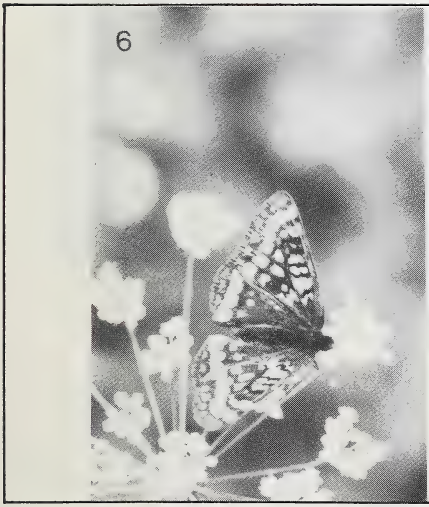
CHECKLIST OF BUTTERFLIES SEEN IN NORTHERN YUGOSLAVIA 1980-83

Index of abundance
1 = rare
2 = scattered
3 = locally abundant
4 = widespread and common
*occurring outside range given in Higgins and Hargreaves, 1983

								Coast			
	first date	last date	Julian Alps	Gorenja Vas	Kranj	Kostanjevica	"karst"	Piran	Umag	Cres	Jacje
Papilio machaon	23.6	21.7	-	2	-	1	1	2	2	2	-
Iphiclides podalirius	22.6	30.7	-	-	-	-	2	3	1	2	3
Parnassius mnemosyne	24.6	24.6	-	-	-	-	1	-	-	-	-
Pieris brassicae	21.6	21.7	2	2	-	-	2	-	2	-	-
Aporia crataegi	21.6	8.7	-	1	-	-	2	-	2	-	-
Artogeia rapae	1.7	2.8	1	3	4	-	-	-	-	2	4
Artogeia mannii	21.6	30.7	-	1	-	3	2	3	3	4	3
Artogeia napi	28.6	3.8	4	4	-	4	-	-	-	-	-
Anthocharis cardamines	29.6	29.6	1	-	-	-	-	-	-	-	-
Colias croceus	21.6	3.8	2	2	2	-	2	2	2	2	-
Colias hyale	1.7	9.7	1	1	-	-	-	-	1	-	-
Colias australis	25.6	3.8	-	2	-	-	2	-	-	2	-
Gonepteryx rhamni	22.6	3.8	2	2	1	3	2	-	1	-	3
**Gonepteryx cleopatra*	6.7	20.7	-	-	-	2	-	-	-	2	-
Leptidea sinapis	21.6	3.8	3	4	1	1	2	3	3	3	2
**Leptidea duponcheli*	2.7	28.7	-	-	1	-	-	-	-	1	-
Leptidea morsei	20.7	20.7	-	-	-	2	-	-	-	-	-
Quercusia quercus	9.7	28.7	-	2	-	3	-	-	-	2	-
Nordmannia acaciae	22.6	24.6	-	-	-	-	2	-	1	-	-
Nordmannia ilicis	2.7	8.7	-	2	2	-	1	-	-	2	-
Strymonidia spini	3.7	13.7	-	2	-	-	-	-	-	-	-
Callophrys rubi	21.6	22.6	-	-	-	-	1	-	2	-	-
Lycaena phlaeas	21.6	27.7	-	-	-	-	1	1	2	2	-
Lycaena dispar	30.7	30.7	-	-	-	-	-	-	-	-	1
Heodes virgaureae	3.7	3.8	1	8	-	-	1	-	-	-	2
Heodes alciphron	3.7	8.7	-	3	-	-	-	-	-	-	-
**Palaeochrysophanus hippothoë*	24.6	1.7	3	-	-	-	1	-	-	-	-
Everes argiades	21.6	23.6	-	-	-	-	1	-	2	-	-
Everes alcetas	23.6	9.7	-	-	-	-	2	-	2	-	-
Cupido minimus	22.6	31.7	1	1	1	-	2	-	1	-	2
Celastrina argiolus	22.6	31.7	1	-	-	-	-	2	1	2	1
Glaucopsyche alexis	24.6	24.6	-	-	-	-	1	-	-	-	-
Maculinea arion	8.7	3.8	-	2	-	-	1	-	-	-	-
**Plebejus pylaon*	21.6	22.6	-	-	-	-	-	-	2	-	-
Plebejus argus	25.6	31.7	-	-	-	-	1	-	1	2	2
Lycaeides idas	23.6	3.7	4	1	-	-	-	-	1	-	-

**Eumedonia eumedon*	24.6	24.6	-	-	-	-	1	-	-	-	-
Aricia agestis	23.6	3.8	3	3	-	2	2	-	1	-	3
**Aricia artaxerxes*	8.7	8.7	-	-	-	-	1	-	-	-	-
Cyraniris semiargus	23.6	3.7	2	2	-	-	2	-	1	-	-
Agrodiaetus amanda	24.6	8.7	-	-	-	-	2	-	-	-	-
Lysandra coridon	14.7	3.8	-	3	-	-	-	-	-	-	6
Lysandra bellargus	23.6	3.8	1	3	-	-	2	-	-	4	3
Polyommatus icarus	21.6	3.8	3	3	3	2	2	2	2	3	2
Hamearis lucina	29.6	11.7	2	1	-	1	-	-	-	-	-
Charaxes jasius	7.7	7.7	-	-	-	-	-	-	-	1	-
**Apatura iris*	29.6	16.7	-	2	1	-	-	-	-	-	-
Apatura ilia	3.7	11.7	-	1	-	1	-	-	-	-	-
Limenitis reducta	21.6	29.7	-	-	1	-	2	-	3	4	-
Limenitis camilla	9.7	9.7	-	-	-	2	-	-	-	-	-
Neptis sappho	17.7	20.7	-	-	-	1	-	-	-	-	-
Neptis rivularis	2.7	16.7	2	2	2	-	-	-	-	-	-
Nymphalis polychloros	21.6	13.7	-	1	-	-	1	-	2	-	-
Nymphalis antiopa	24.6	19.7	-	-	-	-	1	-	-	1	-
Inachis io	22.6	2.8	-	1	-	-	2	-	1	-	-
Vanessa atalanta	22.6	25.7	-	2	-	-	1	-	2	1	-
Cynthia cardui	21.6	2.8	2	2	3	-	2	2	1	2	-
Aglais urticae	24.6	2.8	3	2	-	-	2	-	-	-	-
Polygonia c-album	22.6	31.7	-	-	-	-	-	-	1	-	2
Polygonia egea	20.7	31.7	-	-	-	2	-	-	-	2	2
Araschnia levana	2.7	14.7	-	2	1	-	-	-	-	-	-
Argynnis paphia	6.7	3.8	-	2	-	1	-	-	-	3	4
Mesoacidalia aglaja	1.7	3.8	2	3	-	-	3	-	-	1	2
Fabriciana adippe	22.6	2.8	2	5	-	2	2	-	1	-	2
Fabriciana niobe	29.6	14.7	2	2	3	-	-	-	-	-	-
Brenthis hecate	22.6	3.7	1	-	2	-	2	-	1	-	-
Brenthis daphne	21.6	21.7	-	2	3	2	3	3	2	-	-
Brenthis ino	2.7	2.7	-	-	1	-	-	-	-	-	-
**Clossiana dia*	23.6	21.7	-	-	-	-	2	-	-	-	-
Melitaea phoebe	21.6	14.7	-	2	-	-	1	-	1	-	-
Melitaea didyma	22.6	2.8	-	2	-	-	3	3	3	-	2
Melitaea diamina	30.6	12.7	2	2	3	-	-	-	-	-	-
Mellicta athalia	21.6	3.8	3	3	2	3	3	-	3	-	2
Mellicta aurelia	2.7	2.7	-	-	3	-	-	-	-	-	-
**Hypodryas maturna*	2.7	12.7	-	2	11	-	-	-	-	-	-
**Eurodryas aurinia*	3.7	3.7	-	1	-	-	-	-	-	-	-
Melanargia galathea	21.6	3.8	2	6	3	3	3	3	2	3	3
Hipparchia fagi	22.6	31.7	-	-	-	-	1	-	1	-	2
Hipparchia semele	22.6	9.7	-	-	-	-	2	-	2	-	-
Chazara briseis	7.7	8.7	-	-	-	-	-	-	-	2	-
Minois dryas	31.7	31.7	-	-	-	-	-	-	-	-	2
Brintesia circe	22.6	29.7	-	2	-	-	3	3	2	2	-
**Erebia ligea*	1.7	2.8	2	2	-	-	2	-	-	-	-
Erebia aethiops	31.7	31.7	-	-	-	-	-	-	-	-	2
**Erebia medusa*	24.6	3.7	22	-	-	-	1	-	-	-	-
Erebia styx	17.7	3.8	2	3	-	-	-	-	-	-	-

Erebia pandrose	28.6	28.6	2	-	-	-	-	-	-	-	-
Maniola jurtina	21.6	3.8	3	3	3	3	3	2	3	-	3
Hyponephele lycaon	27.7	2.8	-	2	-	-	-	-	-	2	-
Aphantopus hyperantus	9.7	20.7	-	-	-	3	-	-	-	-	-
Pyronia tithonus	28.7	28.7	-	-	-	-	-	-	-	1	-
Pyronia cecilia	27.7	28.7	-	-	-	-	-	-	-	3	-
Coenonympha pamphilus	21.6	3.8	3	3	2	-	3	-	2	2	3
Coenonympha arcania	22.6	31.7	2	3	2	-	2	4	1	-	2
Coenonympha glycerion	24.6	21.7	-	-	-	-	2	-	-	-	-
**Coenonympha oedippus*	4.7	4.7	-	-	-	-	-	1	-	-	-
Pararge aegeria	21.6	31.7	1	-	-	-	1	2	2	3	3
Lasiommata megera	25.6	3.8	-	1	-	-	1	3	2	3	3
Lasiommata maera	24.6	24.6	-	-	-	-	2	-	-	-	-
Lopinga achine	9.7	9.7	-	-	-	3	-	-	-		-
Pyrgus malvae	3.7	3.7	-	1	-	-	1	-	-	-	-
Pyrgus alveus	23.6	1.7	2	-	-	-	2	-	-	-	-
**Pyrgus onopordi*	27.7	30.7	-	-	-	-	-	-	-	1	2
Spialia orbifer	28.7	28.7	-	-	-	-	-	-	-	3	-
Carcharodus alceae	7.7	7.7	-	-	-	-	-	-	-	1	-
Erynnis tages	25.6	30.7	2	-	-	-	2	-	-	2	2
Heteropterus morpheus	21.6	8.7	-	-	-	-	2	-	3	-	-
Thymelicus acteon	23.6	4.7	-	-	-	-	-	3	2	-	-
Thymelicus lineolus	21.6	2.8	2	3	-	-	-	-	4	-	3
Thymelicus flavus	23.6	3.8	2	3	3	-	3	-	1	-	2
Ochlodes venatus	21.6	3.8	3	4	3	3	2	-	3	-	4
Hesperia comma	1.8	3.8	-	2	-	-	-	-	-	-	4
**Gegenes nostrodamus*	24.6	24.6	-	-	-	-	1	-	-	-	-



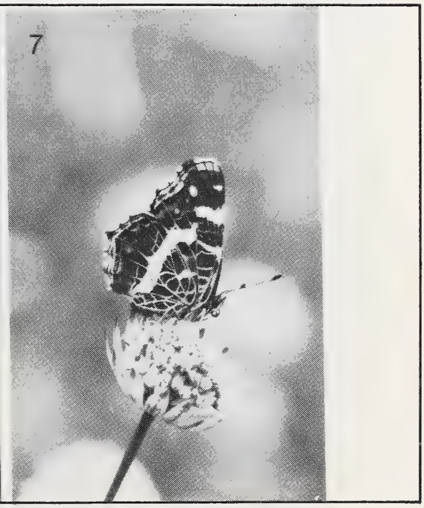


Fig. 6. Scarce fritillary (*Hypodryas maturna*) near Kranj, Slovenia, July 1982.
Photo: D. Withrington

Fig. 7. Map butterfly (*Araschnia levana*) on mountain sanicle near Kranj, Slovenia, July 1982. *Photo: R. Price*

Fig. 8. Midday walk near Gorenja Vas, Slovenia, July 1982.

Photo: D. Withrington

range were *P. egea* and *E. aethiops*. On the grassy plains north of Jacje, we saw clouds of *L. coridon* and ·*Hesperia comma* was abundant.

In the time available my coverage of butterfly habitats in northern Yugoslavia was bound to be exploratory rather than comprehensive. On future visits I would like to look at more alpine, forest and marshland areas and to investigate the 'karst' grassland more thoroughly. It would also be interesting to make a visit at a different time of year. There is obviously much more to be seen. Nevertheless, I believe that my checklist represents a good cross-section of the butterfly fauna and provides a framework to which further records can be added.

One word of warning to prospective visitors; 'maps' — these are not available in any more detail than 1:300,000, except for parts of Slovenia, where a 1:50,000 coverage is being achieved with 1:20,000 in places (e.g. Julian Alps).

Our visits to northern Yugoslavia would not have been as successful and enjoyable if it had not been for the hospitality of friends in Ljubljana and for the assistance of the Institute for Preservation of Cultural Monuments and Nature Conservation of Slovenia.

David Withrington (7110)

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A RARE MIGRANT

Camberwell Beauty in Berkshire — On September 23rd, 1983 a friend of mine telephoned to say she had seen an example of *Nymphalis antiopa* L. in her garden at Crowthorne and that it was feeding on fallen fruit. I hastened round to her house and was rewarded by seeing the butterfly return and rest for a while on an adjacent willow tree. I approached within a few feet and saw that it undoubtedly was a Camberwell Beauty in fresh condition and with a wing span much greater than a Red

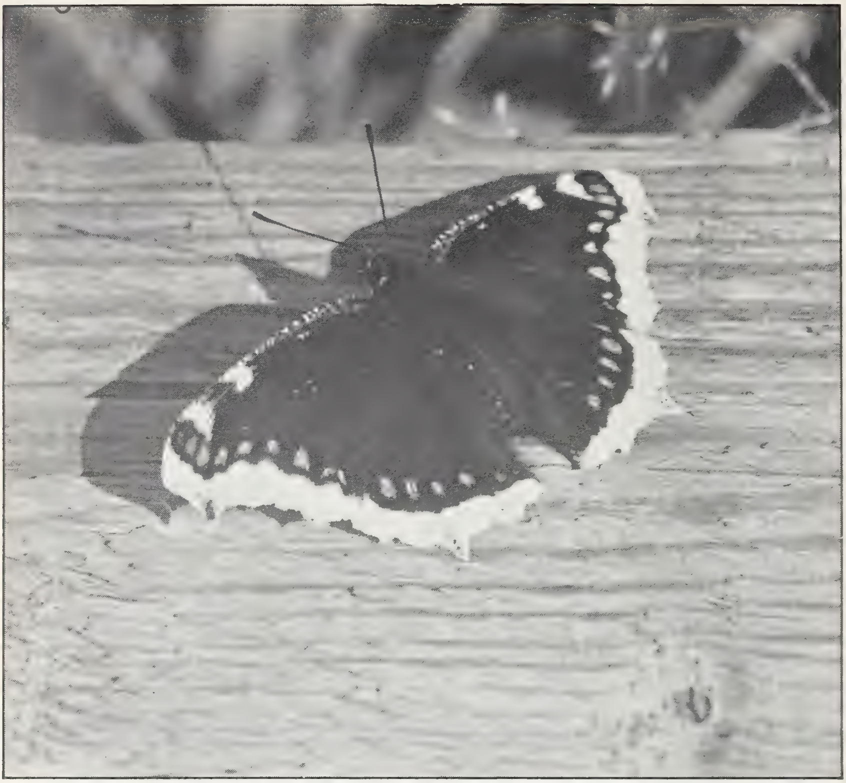

Fig. 9. Camberwell Beauty sunning itself on a plank. The inspiration of numerous stamp designers. *Photo: Leigh Plester (2968)*

Admiral, and therefore probably a female. The marginal edges were fairly wide and very pale cream in colour. The butterfly remained in the garden for over half an hour occasionally resting high up on the willow tree. So far as I know this is the first time this species has been seen in this neighbourhood.

L. Chalk (4867)

ENTOMOLOGICAL PHILATELY OR PHILATELIC ENTOMOLOGY?

I have been interested in moths and moth collecting for many years and began my first collection in 1951. However, due to a number of reasons, entomology never became a continuous hobby.

I recently took early retirement and decided that perhaps a return to this subject might be one of the answers to the extra time I had on my hands. I joined the AES with a view to taking the study of Lepidoptera more seriously. Unfortunately (or fortunately), I went through a period which left me with certain attitudes of mind which were not there previously, or at least, if they were, I was not conscious of them. Not least among these was the fact that I no longer wished to capture, kill, set and pin etc. . . . . living insects. Neither was I interested in the breeding or rearing of them. In spite of all this I was still interested in Lepidoptera, read a great deal about them, and wanted somehow to be involved with them.

At this time my son was having a great deal of success in the world of philately. Naturally I was delighted by his successes in exhibitions etc. and my interest was aroused, particularly in the thematic sector of philately. It was then that I decided to join the thematic world of stamp collecting and chose as my theme — The Butterflies and Moths of Europe.

I began by simply buying any sets of stamps with butterflies or moths on them and mounting them in my album under the heading of the country of origin. I felt, however, that there are so many interesting facts about each species that some of this information should accompany the stamps to help build up the theme. This is where I ran into difficulties.

There are a number of methods of layout and each seemed to have snags. Many of the same species are produced by different countries and, naturally, I did not want to repeat the information over and over again. The cross referencing became a nightmare! Eventually, I decided to reorganise my collection on completely different lines. I decided to use a species layout rather than a country or 'set' layout. As an example I will take the Camberwell Beauty Butterfly (*Nymphalis antiopa* L.). The space at the top of the page — normally reserved for the name of the country — I used as follows:—

CAMBERWELL BEAUTY BUTTERFLY

(NYMPHALIS ANTIOPA) FAMILY: NYMPHALIDAE
Linnaeus 1758 (Swainson 1827)

(then follows any interesting information — in this case:—)

This handsome migrant species occurs throughout Europe with the exception of Southern Spain and the Mediterranean Islands. Although it is generally a rare visitor to the British Isles, it sometimes occurs in quite large numbers along the eastern seaboard (most probably from Scandinavia). It also occurs in N. America where it is known as the 'Mourning Cloak'.

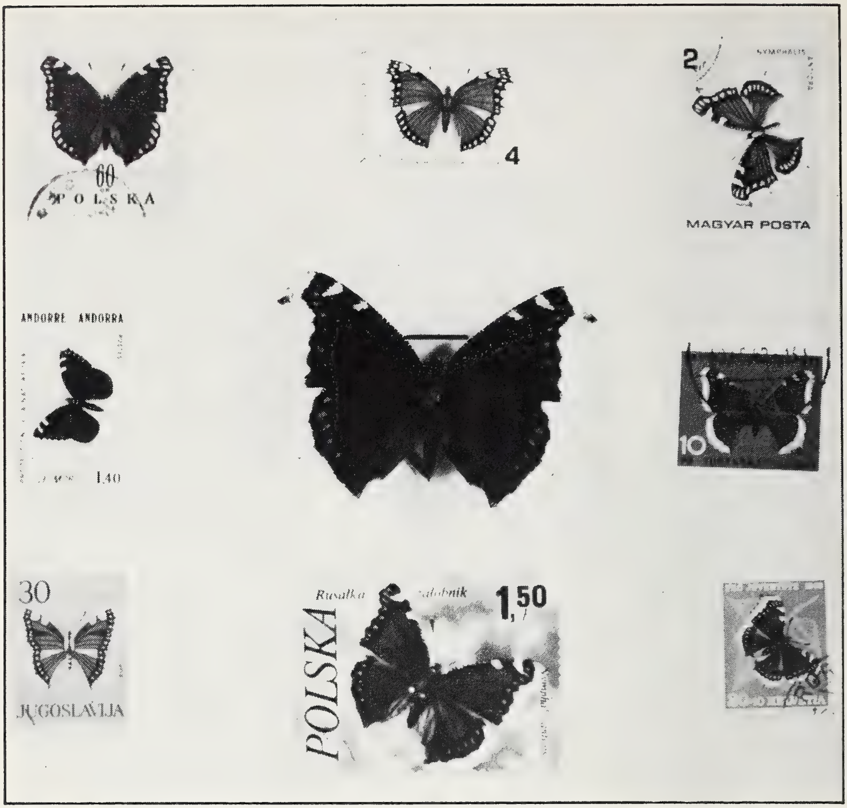

Fig. 10. Camberwell Beauty surrounded by the stamps depicting it.

Photo: Francis Pang

Its common name — 'Camberwell Beauty' — refers to the specimem recorded in 1748 from Cool Arbour Lane in Camberwell. It appears to have attracted attention of the earlier Entomologists about the middle of the 18th century.

Stevens, writing in 1827, remarks that — "About sixty years ago it appeared in such prodigious numbers throughout the kingdom that the entomologists of the day named it "The Grand Surprise". It has also been referred to as the "Willow Beauty" and the "White Petticoat".

Newman called it the "White Bordered" but from this it would appear he had not seen the specimens with the characteristic ochreous borders.

The usual habitats are open country and light woodlands, often among hills and mountains. The eggs are laid on twigs or stems in small batches of 30 or 40 up to large ones of 150—250.

The caterpillars feed gregariously beneath a silken web and do not disperse until about to pupate.

There is a single generation each year flying from June until late autumn, and again in the spring after hibernation.
"The Camberwell Beauty" enjoys much attention from the collectors because of its suitability for experiments concerning the influence of temperature on the wing pattern." This last sentence is a quote from "A Colour Guide to Familiar Butterflies, Caterpillars and Chrysalides" by Josef Moucha.

"In spite of the vast range of this species, geographical variation is practically non-existent." This is a quote from "A Field Guide to the Butterflies of Britain and Europe" by L. G. Higgins and N. D. Riley.

Wing span: 75 mm. Larval food plants: sallow, willow, birch, elm.

Following this are the stamps depicting the Camberwell Beauty with the country and date printed underneath. So far I have Andorra 1976, Bulgaria 1962, Hungary 1966, Poland 1967 and 1977, Switzerland 1953, West Germany 1962 and Yugoslavia 1964.

Frequently the names on the stamps are incorrect or out of date, in which case I make a note by the side. In the case of the Camberwell Beauty the stamps from Poland (1967) and Yugoslavia (1964) have *Vanessa antiopa* on them. I have printed "*Vanessa antiopa* is now *Nymphalis antiopa*".

I also try to obtain a European stamp with a picture of the larval food plant on it. This I mount in the bottom right hand corner of the page of butterflies. I have adopted this format for each of the species I have collected. So far (1st September 1983) I have 180 stamps bearing butterflies or moths of Europe (124 butterflies and 56 moths). There are only a dozen or so left on my 'Wants List'.

I have divided my album into two sections — Part 1 Butterflies and Part 2 Moths.

The species so far issued by European countries on stamps which I have in my collection are as follows (the numbers in brackets indicate the numbers of that particular species issued up to 1983).

BUTTERFLIES

Hesperiidae:	Checkered Skipper (1)
Libytheidae:	Nettle Tree Butterfly (1)
Lycaenidae:	Chalk Hill Blue (1), Common Blue (1), Large Blue (5), Lesser Fiery Copper (1), Meleager's Blue (3), Purple Edged Copper (1), Scarce Copper (2), Turquoise Blue (1).

Nymphalidae: Camberwell Beauty (8), Hungarian Glider (1), High Brown Fritillary (1), Large Tortoiseshell (2),Painted Lady (2), Pallas's Fritillary (1), Peacock (9), Poplar Admiral (1), Lesser Purple Emperor (3), Purple Emperor (4), Red Admiral (7), Silver-washed Fritillary (1), Small Tortoiseshell (4), Two-tailed Pasha (1).

Papilionidae: Apollo (11), Clouded Apollo (1), Eastern Festoon (1), Scarce Swallowtail (6), Southern Festoon (2), Swallowtail (9).

Pieridae: Balkan Clouded Yellow (1), Black-veined White (1), Brimstone (2), Clouded Yellow (3), Danube Clouded Yellow (1), Eastern Pale Clouded Yellow (1), Large White (1), Moorland Clouded Yellow (2), Orange-tip (5), Pale Clouded Yellow (3).

Satyridae: Great Banded Grayling (1), Marbled White (3), Wall (1).

Unidentified as yet! — Two from San Marino, both of which are tropical rather than European.

MOTHS

Arctiidae: Cream-spot Tiger (1), Garden Tiger (2), Hebe Tiger (2), Jersey Tiger (4), Scarlet Tiger (2), Pericallia matronula (1), Rhyparia purpurata (1), Rhyparioides metelkana (1). (I do not know if these last three have English names.)

Geometridae: Large Emerald (1), Magpie (2), Marsh Carpet (1), Orange Underwing (1).

Lasiocampidae: Oak Eggar (1).

Lymantriidae: Black Arches (1), Gypsy (1), Vapourer (1).

Noctuidae: Clifden Non-pareil (3), Red Underwing (3).

Saturniidae: Emperor (1), Great Peacock (3), Spanish Moon moth (1).

Sphingidae: Broad-bordered Bee Hawk (1), Death's Head Hawk (5), Elephant Hawk (1), Eyed Hawk (2), Oleander Hawk (2), Spurge Hawk (2), Proserpinus proserpina (1).

Zygaenidae: Forester (1), Variable Burnet (2).

NOTE: Most often issued butterfly — The Apollo (11), nine different countries. Most often issued moth — The Death's Head (5), five different countries.

Apart from the above mentioned stamps I also have in my album the Following:

Three pages (illustrated with stamps) on Carolus Linnaeus — his life and his journeys through Sweden.

One page on pollution plus a stamp illustrating a polluted butterfly.

Two pages listing the nine European families of butterflies with brief notes on each.

Three pages listing the 25 European families of moths with brief notes on each.

Two pages of stamps on which the butterflies are not the main theme. (e.g. Monaco "Little Red Riding Hood" — a one frame stamp celebrating the 350th anniversary of Charles Perrault (writer). There are three little butterflies flying round the Little Red Riding Hood's head!)

One page on the Belgian Textile Industry. The stamp bears, among other things, a small Chinese or Indian Species of the family Saturniidae.

One page on the Bulgarian Silk Industry. This is a set of four stamps illustrating the life-history of *Bombyx mori.*

One page on the Rumanian Silk Industry. Again, stamps (3) illustrating *Bombyx mori.*

Finally, at the back of my album I have made a list of butterflies seen in my garden last year (1983). I put the date, the name of the butterfly, the place or plant on which it was resting or feeding and a little general information — migrant, resident, brood etc). I also add a picture of the butterfly (mounted like a stamp) taken from the sheet of butterflies published by Frederick Warne & Co. and obtained from Watkins & Doncaster of Hawkhurst, Kent.

So far I have seen the following (in this order): Peacock, Comma, Large White, Speckled Wood, Orange-Tip, Small White, Wall, Green-veined White, Red Admiral, Large Skipper, Gatekeeper, Holly Blue, Brimstone, Painted Lady, Small Tortoiseshell.

I am sure this is only the beginning of this theme of mine.

I can see many avenues into which this basic collection can lead me. More famous entomologists on stamps? Places famous for butterflies or moths, *e.g.* Rhodes. Suggestions from Common or Scientific names? My pages on The Apollo contain a Greek stamp depicting Apollo — the Sun God. And so on. . . .

I am sure many Entomologists-cum-Philatelists will read this and find it all very 'old hat' or very tame. However, it may give some ideas to some of our members if they are looking for something different.

Alan J. Winters (7117)

SILK FROM HAWTHORN

(Continued from page 47)

V: OBSERVATIONS

A. Time Cycle

- — Emergence of the Moths to Pairing: up to five days.
- — Pairing and egg-laying to death of the Moths: between five to ten days.
- — Life of the Moths: usually ten to 14 days.
- — Ova — from laying to larvae: approx. 18 days in a warm temperature (24° C.) or up to 27 days in a cool temperature (15° C.).
- — Appearance of larvae to start of spinning: approx. 32 days.
- — Instars of larvae: approximately as follows:
    - 1st instar: 1st — 3rd Day
    - 2nd instar: 4th — 8th day
    - 3rd instar — 8th — 12th day
    - 4th instar: 12th — 18th day
    - 5th instar: 18th — 32nd day
- — Spinning of cocoon: up to five days, but not to be disturbed for ten days.
- — Storage or Resting period: in a warm temperature (20°—24° C.), three months.
  in a cool temperature (12°—15° C.), six to eight months.
- — Total time for a Moth's Life Cycle estimated to be approximately 60 days from emergence to the storage of the cocoon.
- — Total time for a breeder to produce one crop of cocoons: approximately three months.

B: Emergence of Moths from Pupae

In 1980 the single male and female moths emerged from the pupae in the early evening, between 1830 and 1900 in a cool temperature.

In 1981 and 1982 under simulated tropical conditions of heat and humidity in the lab, the moths were seen emerging during thee day (0900-1700).

It was possible to save some of the moths which had difficulty in emergence either by carefully slitting the cocoons lengthways with scissors or (even more carefully) by assisting the moth struggling from the pupa case with a scalpel.

Moths which had difficulty in climbing the twigs were assisted when possible.

C. Moths

The resting period after emergence for the formation and drying out of the wings appeared to last from five to twelve hours.

Each Moth seemed to be able to eject the brown liquid (a defence mechanism?) more than once in response to being disturbed or alarmed.

The Moths were often heard to whistle during the day but less in 1982 than in 1981. The reason for it is still unknown and nothing was "seen" to happen at the time. Unfortunately this whistle has not yet been tape-recorded.

In 1980, pairing was observed to last more than 24 hours (simple to observe if one has only a single pair) and was repeated for a shorter period (8 to 12 hours) after a separation of several hours.

In 1982, pairing occurred less frequently than in 1981. Several males and females died without pairing. Variations of temperature and humidity were tried without convincing results and the team were left with the impression that 24° C. with 45% to 65% humidity produces acceptable conditions for the moths.

D: Egg-laying

This occurred at intervals when approximately 10 to 50 eggs were laid at a time.

E: Ova

Eggs were collected from the netting of the pairing cage when an intrusion would not disturb either the laying or the pairing moths. In 1980 approximately 250 eggs were laid by the single pair; in 1981 a conservative minimum estimate was 3,000 and in 1982 no attempt was made to count or estimate the number of eggs. But 100 eggs will cover a 1976 British new penny and approximately 80 eggs will cover a 1980 American dime.

In 1982, the major serious error which occurred (committed by the author) was in placing some of the foodplant (hawthorn) in one box of ova before the larvae had emerged. Even with the lid off the box, the presence of the foodplant during only one night (when plants give off carbon dioxide) was fatal on this occasion. At least 25% of potentially fertile eggs were lost from the total laid, not including others which were known to be infertile anyway.

F: Larvae

In 1980, before the larvae were moved to controlled laboratory conditions, approximately 100 larvae were lost due to a sudden rise in temperature in a garden shed. They were not in direct sunshine, but the temperature rose to 30° C., which, in less than 20 minutes resulted in severe collapse, possibly heatstroke. All were thought to be dead, but 50% revived after 48 hours. Since then the larvae have done well in the simulated tropical conditions already described (see page 44), but the general instructions and advice on rearing larvae (see Crotch (1956), 8—14) were observed:

- — sufficient freshly picked foodplant given each day and dried if necessary.
- — boxes were cleaned daily and often disinfected with Milton 2 as well
- — no overcrowding
- — good ventilation
- — minimum handling
- — immediate isolation of sickly-looking larvae.

In addition, Dr. Jolly had warned the author in 1980 that cigarette smoke and fumes of gas or paraffin would probably kill the larvae, so there was no smoking in the laboratory.

It was noted that the larvae became inactive if the temperature dropped to 15° C., and that they ate less if the temperature dropped from 24° C. to 21° C. or 22° C. After the disaster in the garden shed at 30° C., the temperature was not raised above 26° C., especially when it was found that the larvae did well at 24° C.

The St. Andrews larvae did not appear to match the descriptions of *Hyalophora samia* larvae given in Crotch (1956) and of *Hyalophora cecropia* larvae given in Gardiner (1982). It is understood that variations may be due to differences in foodplant, temperature and humidity. (For comparisons, see Discussion.)

Some larvae appeared to pass through an extra instar, but further observation is needed to be certain.

G: Large Caterpillars (4th and 5th instar)

These large caterpillars ate voraciously. If the supply of foodplant became scarce, they nipped each other.

At the end of the 5th instar, when the caterpillars measure approximately 8 — 10 cm they were weighed. It was found that there are approx. 32 caterpillars to 1 lb or 0.45 kg, each one weighing approx. 0.5 oz or 14.17 grams, using an analytical balance.

H: Cocoons

The colours of the cocoons vary for reasons which are not understood because all the moths and larvae were raised under the same conditions and with the same foodplant.

I: Silk

Threads of silk from *B. mori* and *H. cecropia* were measured using the light microscope. The silk of *mori* measured 0.03 mm and the silk of *cecropia* 0.04 mm. (A very fine human hair measured 0.1 mm.)

Degumming the cocoons was achieved in 1981, but the raw silk could only be reeled with difficulty. Instead, a small amount was carded and spun into yarn by Mrs. MacKay, who has been a demonstrator of carding and spinning wool at the Scottish Craft Centre, Fort William. She had never spun silk before.

In 1982 *cecropia* cocoons were taken to India where they were degummed and the silk was handspun at the Central Sericultural Research and Training Institute of the Central Silk Board, Government of India, Mysore. An experiment will be carried out ''in due course'' on the possibility of commercial spinning. A further quantity of cocoons has been sent to India for this purpose.

Silk Gut: During World War II, gut was produced from *mori* for surgical purposes in the Belgian Congo. In 1981, some of the caterpillars which were about to spin were placed in a mixture of salt and vinegar for twelve hours and then dissected. It was found that at least one meter of gut could be reeled on to a wooden rod from the silk glands of cecropia. This gut was not measured with the light microscope.

J: Labour

Growing the foodplant: this was not necessary as the hawthorn was growing wild in the area and local farmers gave permission for their hedges to be clipped.

Picking the foodplant: this took one person approximately one hour daily, but time had also to be allowed for transport to the laboratory.

Daily cleaning and feeding: this took three people at least one hour. At the weekends, it took one person to pick, clean and feed the larvae between four and five hours each day.

The work is not difficult, but it requires conscientious, dextrous people who will give strict attention to the routine care of the stock. Although raising the larvae must be classed as labour-intensive work, dealing with the other aspects of sericulture (care of pupae, moths, ova and cocoons) is not so time-consuming.

VI: RESULTS

1. It was found that it is possible to raise silk which can be handspun into silk yarn in Scotland from a non-mulberry silkmoth, *H.cecropia* using hawthorn (*Crataegus monogyna)* as a foodplant.

2. The moths reproduced under simulated tropical conditions in a laboratory in 1981, having emerged from the cocoons of 1980. They reproduced again in 1982, having emerged from the cocoons of 1981. Thus, under the conditions described in this paper, *cecropia* has flourished to the second generation.

3. The cocoons were satisfactorily degummed experimentally, and the formula used has been confirmed as effective and appropriate by the Central Sericultural Research and Training Institute, Mysore, India.

4. It was found that the silk from *cecropia* cocoons has a good sheen and that it can be satisfactorily handspun (but not reeled), which was also confirmed by the Research Institute in Mysore.

5. Sericulture as a cooperative community venture in Scotland would be possible, but it is very unlikely that it could be profitable in a climate which favours single-brooded moths because most foodplants are not naturally available all through the year.

6. The emergence of *cecropia* moths in Kinshasa, Zaire in October, 1982 from cocoons spun in Scotland in June, suggests that this species might be double-brooded if raised in tropical conditions. Without an opportunity to search for foodplants in Zaire and to continue the experiment there, it is not known how suitable this silkmoth would be for sericulture in Zaire.

7. Harvest:

(a) Breeding:

	Year	Approx. no. of Larvae raised to 3rd instar	No. of Cocoons
From a single pair of *Hyalophora cecropia*	1980	120	57
From 1980 cocoons	1981	600*	400
From 1981 cocoons	1982	460	380
From 1982 cocoons taken to Zaire from Scotland	News has been received that several moths hatched in October 1982. Details are awaited about whether they paired and if so, whether larvae appeared and survived.		

* Of these, 75 were sold or given away.

(b) Raw Silk:

It was necessary to concentrate on raising stock, but in June, 1982 approximately 200 cocoons weighing 85 grams or three ounces were sent to an officer of the Central Sericulture Research and Training Institute, Mysore, India. Results of an experiment to test this silk can be satisfactorily spun commercially, and how much spun yarn this amount of silk yielded, are awaited.

8. The low mortality rate of the larvae, which has been consistent over a three-year period is attributed to the controlled temperature, humidity and ventilation conditions and to the meticulous attention given to routine care and hygiene.

VII: DISCUSSION

A: Problems

1. Learning by experience: every effort was made to study the available literature and to contact knowledgeable people about how to proceed. The experienced people were far distant from St. Andrews and the books, while useful, seldom solved the current problem. The 1982 edition of *A Silkmoth Rearer's Handbook* edited by B.O.C. Gardiner appeared after the July, 1982 harvest of cocoons. This new edition, with information on Diapause and Temperature in Part I, is especially interesting and much more helpful than the 1956 edition, which was good as far as it went. During the period of this experiment, 1980 – 1982, it was necessary to proceed by trial and error. Decisions for better or worse had to be taken, and differences of opinion arose mainly over the following points:

(a) Emergence: in April, 1982 the moths began to emerge in the cool temperature — 12°–15°C., but they did not pair. Was it best to wait or move them to the warmer temperature of 24°C? After a few days, they were moved.

(b) Pairing: In 1982 the moths were slow to pair. Should they have more humidity or less? From 35% the humidity was increased to 50% and then to 70% and then decreased to 45%. The moths were still slow to pair and even refused to pair. This reluctance may be explained by the "...genetic 'antagonism mechanism' ...which is designed to prevent inbreeding..." (see Gardiner (1982), 47). Perhaps the temperature did not suit them, but this remained at approx. 24°C., with some unavoidable slight variations which would, in any case, occur under tropical conditions in Africa.

(c) Ova: it did not seem possible to ensure that the eggs were the right way up (see Crotch (1956), 10) and they were not collected by cutting the netting of the cage, but by gently removing them by hand or finger-nail.

(d) Larvae: during the author's absence in September, 1980 the larger larvae were handled if necessary by the other members of the team. They remain convinced that handling the larvae during the cleaning process is not harmful and this practice was continued in 1981. During 1982 the author did most of the work without handling the larvae and believes that the mortality rate which was slightly lower in 1982 than in 1981 may have been reduced because of this, but it is unproven.

(e) The Spinners: The problem of how to separate the spinners from the munching non-spinners was not solved. The caterpillars of *cecropia* are very active just before they spin and when they were separated during the active period they often appeared to change their minds and start eating again. In 1982 small cardboard tubes (4" or 10 cm. x diam. 4.5 cm.) were placed in the transparent plastic boxes containing an imminent spinner. The caterpillars always explored the tube carefully and frequently a cocoon was spun inside, sometimes a cocoon was found at each end of the tube. If so, tube and spinner could then be removed from the box leaving behind the non-spinners; or even if they remained, foodplant could be added to the box without disturbing the spinners. Nevertheless it seemed easier not to try to control the spinning caterpillars and the tube idea was not adopted.

(f) Cocoons: The author preferred to accept the advice of experienced breeders and leave the cocoons undisturbed for at least ten days. Other members of the team (when short of boxes) found that the cocoons could be 'peeled off' the boxes a bit sooner and remain convinced that this does not damage the pupae. Some of the cocoons were harvested after five or six days in 1981 and apparently survived. Messrs. Mackie, Johnston and Roche are confident that no damage is done but the author remains uneasy about this.

2. Keeping Records of the Experiment: This proved unexpectedly difficult. Keeping the larvae alive and healthy was so time-consuming that little extra time was available for making detailed notes of what was happening. Even a daily count of larvae was not always possible. Photographs of each stage of the life cycle were duly taken, but the most complete film records of the work in 1982 were accidentally placed in defective developing solution and ruined.

3. Labour and Finance: The team of four people who undertook this experiment could only give some of their free time to the work on a voluntary basis. Nothing could have been achieved without the help of Professor Callan in giving hospitality to the larvae in 1980. The imaginative care and attention given to the larvae by Messrs. Mackie, Johnston and Roche that first year and ever since, has enabled the experiment to be continued. There was no budget and such funds as were needed for equipment (paper towels being a noticeable item) and other expenses have been met by the author, who could not have achieved such success single-handed.

Further work cannot be continued in 1983 on this basis, but the team would consider undertaking sericultural research on *cecropia* or on another species of non-mulberry silkmoth if funds were granted to the University of St. Andrews for what is essentially an agricultural development project for the Third World.

B: Questions

1. Genetics: It is not known how effective the genetic 'antagonism mechanism' referred to by Gardiner will be in case of the *cecropia* reared at St. Andrews. No new stock has been introduced since the first single pair emerged in 1980. How long will it be before the succeeding generations become infertile or inhibited from pairing by this mechanism?

2. Pathology: If new stock is to be introduced, how are "Disease-free layings" to be obtained, and from where? Alternatively, is there a known quarantine period for some viral and bacterial diseases during which incoming stock should be isolated?

C: Comparisons

1. The *cecropia* larvae: differences were noted between the larvae reared at St. Andrews and the descriptions given by other breeders. It is not possible in this paper to give more than a general description of the colours of the larvae at different instars, but they will be sufficient to give an indication of the variations from those described by Crotch (1956) and Gardiner (1982).

TABLE SHOWING COLOUR VARIATIONS OF HYALOPHORA CECROPIA LARVAE

INSTAR	ST. ANDREWS	CROTCH & GARDINER (p.142) (p.163)	COLLINS & WEAST (p.2)
1. Ova to larvae	emerges from the egg completely black	black & yellow, then black	black
2.	black and yellow	black, raw umber, charcoal diamonds	no details
3.	yellow & black with charcoal diamonds & coral red DT on segs 2 and 3	wholly umber with black armature & legs	no details
4.	blue green with charcoal diamonds turning blue, coral red DT on segs 2 and 3 and others blue and yellow to greenish blue; spiracles white ringed with black ? may have black perpendicular line	deep chrome & black blue clypeus, DT on segs 2 and 3 tall and orange. Tubercles becoming blue. Spiracles white encircled with black and black perpendicular line.	no details

5.	bright green (no diamonds) the coral red DT have turned to yellow or pale orange on segs 2 and 3 and others are blue and yellow. Bluish colour along sides of caterpillar which grows to 8-10 cm. as it prepares to spin. Then it gets thinner & duller in colour.	pea green with wash of cobalt blue along back from segs 2-11 no black dots, no perpendicular line with spiracles. DT bulbous with 8 black flattened knobs on crown. DTs on segs 2 and 3 remain coral red, others lemon yellow.	large green larvae with 4 yellow to orange thoracic tubercles, and many smaller blue and yellow ones.

It is suspected that occasionally the larvae pass through an additional instar between or during instars 4 and 5. Further observation is necessary.

2. The cocoons and pupae: Gardiner has not described the cocoons or pupae although Crotch (1956) mentions both. The St. Andrews cocoons and pupae vary from the descriptions of Crotch and Collins & Weast.

TABLE SHOWING COLOUR VARIATIONS OF *HYALOPHORA CECROPIA* COCOONS AND PUPAE

(a)	COCOONS:		
	Many different colours from white to silvery grey to pale tussah beige to darker tussah brown, sometimes with dark pink and russet tinge. Cocoons are sometimes almost sealed, some are tight and compact spun along a twig, others are baggy and softer. All are double. Approx 7 cm. in length.	Spun in two styles, firm along a twig or large, soft and fleshy. Both styles are double, unsealed and imperforate. Colour is burnt umber, but colour varies to suit the colour of the bark.	reddish-brown to grey cocoon: tight compact or large and baggy.
(b)	PUPAE:		
	Large (approx. 3 cm.) and dark brown to black. Emergence may be early morning or afternoon. No time more usual than another. Wing development usually two to three hours but many hours for resting before pairing.	Large, stumpy and black and should be fixed so that moths can climb out perpendicularly. Emergence is in the early morning. Wing development may take six hours.	no details

3. *Hyalophora cecropia* and *Bombyx mori:* At the Research Institute in Mysore, India the author learned that the time span "Egg to Silk" for *mori* is 28 days under the Government-recommended conditions of temperature and humidity. It was found in Scotland that the time span "Egg to Silk" for *cecropia* was 32 days.

The Government-recommended conditions of temperature and humidity for *mori* in India were 27°C. for Instars I and II, 26°C. for III and 25°C. for Instars IV and V. The humidity began at 90% and decreased gradually to 70%. It was difficult to control the humidity in the laboratory at St. Andrews, and further research will be necessary to establish the best level of humidity for *cecropia.*

VIII: CONCLUSIONS

1. The experiment was successful in demonstrating that this non-mulberry silkmoth, *Hyalophora cecropia,* can be reared successfully by unskilled people under simulated tropical conditions in a laboratory.

2. It has been found that raw silk can be successfully produced from *cecropia* using Hawthorn as a foodplant, provided that strict attention is given to routine care of the livestock during the complete life cycle, when kept under the described conditions of controlled temperature and humidity.

3. This species of wild silkmoth produces what appears to be a good quality of handspun silk.

4. The success of the experiment is sufficiently encouraging to suggest that sericulture should be seriously considered as an agricultural development project in countries where climatic and socio-economic conditions are suitable and where a labour-intensive cottage industry would be practicable.

5. A feasibility study should be undertaken on the possibility of sericulture as an agricultural development project in Zaire preferably by Indian experts who have specialized in simple, basic technology suitable for impoverished rural areas of Third World countries. (The Japanese technology is too complex and sophisticated, requiring too high a standard of maintenance and expertise for the rural areas of Africa.)

6. *Hyalophora cecropia,* already well known and much used as a research insect, having "the highest known titre of juvenile hormone of any other species" (see Gardiner (1982), 161-2), may also be found suitable as a source of silk for agricultural development projects in the Third World.

7. Further experiments could be undertaken on other species of non-mulberry silkmoths under controlled simulated tropical conditions, to determine how difficult they would be to rear and to test the quality of silk produced.

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Cecilia Irvine (7080)

BOOK REVIEWS

Naturalists' Handbooks: A series of books aimed chiefly at sixth formers and those interested, but without a biological background, and designed to facilitate further study. Each book in this new series deals with a specific subject and is intended to provide enough information to arouse the reader's interest and suggest topics for investigation and encourage research. The first four volumes in this series have now been published. They are:—

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No. 4. *Insects on thistles* by Margaret Redfern.

All are (i) + 64 + (1) pages with numerous figures and coloured illustrations or plates. Published by Cambridge University Press 1983. Price hardback £8.00, paperback £2.95.

Marcel Proust wrote a famous book entitled 'Memories of Times Past'. This series, very sadly, draws attention to such ''memories of times past'', times when the University Press had a reputation for excellence, a reputation held for some 500 years and a standard other printers strove to emulate. This series is making every effort to refute that reputation. Typographically these books are appalling, as if thrown together by some cheapjack publisher out for a quick profit. It might be as well to itemise some of the faults.

(i) There is no proper title page, but a bastard page which combines the series number, the book title and author(s), the contents list and the publisher's name. The authors' names are set to the left of the contents list so that they run into the margin.

(ii) Perhaps the worst feature. The right hand margin is not justified, so that the text appears to be typewritten. Originally this was done for cheapness by using camera-ready copy of IBM typed manuscripts (as opposed to typesetting). In these days of computers and word processors there is absolutely no excuse whatsoever for this style of presentation.

(iii) The pagination is miscegenated: thus, in No. 1, it is stated that plates 1-5 are between pp. 32 and 34. So where is page 33? Why, it must be the page labelled plate 5! No. 2, with only four plates has it correct, but both No. 3 and No. 4 have the plates between 32 and 37. So there are four missing pages! Presumably it was originally intended to paginate the black and white plates.

(iv) For some reason, in no case is the last page (65) paginated. This page is printed on the obverse of the endpapers, an almost unique example of bad practice.

(v) In all the volumes the index, and last page or two, are printed in very small type. Surely an index should be easy to read without the use of a magnifying glass. This has almost certainly been done to squeeze the books into the 64 pages allowed. In view of the large amount of wasted space elsewhere (see below) this is a typical example of the lack of typographical planning at the production stage and quite unworthy of a University Press.

(vi) The Tables are inconsistent in layout and typeface. In No. 1 for instance. Tables 3 and 4 run fully across the page while Table 5 occupies only two-thirds of the width in minute type difficult to read. The general impression is that the whole series has been cut to a production cost and literally squeezed into its 64 pages. There is a considerable amount of wasted space on those pages containing diagrams and with proper planning this space could so easily have been with text, thereby relieving the squeeze on page numbers.

Having said all the above, we must now turn to the contents, and here there is a complete reversal of the bad production. The contents are well illustrated and fulfil a need. We have had so many books on butterflies and ''popular'' insects lately that there has been great difficulty in finding anything authoritative about other groups. Here we have it. Two of the volumes deal with specific groups, the other two specific mini-habitats. The nettle patch should clearly be preserved. The tidy gardens and the weedkiller pushers should be banned. The volume on nettles not only describes the wide and interesting numbers of insects, in all stages, to be found on these otherwise noxious ''weeds'' but also goes into the ecology of the nettlebed. Both this and the thistle volume should set the example as to what can be done by taking some small discreet habitat and studying it thoroughly. Thistles appear to have a far greater number of insects associated with them than do nettles (see review published *Bull. Amat. Ent. Soc.* 41:95) and here the author has had to be rather more selective and the approach is more taxonomic. This of course also gives the young entomologist the opportunity to expand on the work, perhaps as an 'A' level project or as a project in its own right with the view to writing up and publishing his/her first paper.

The two volumes on Solitary Wasps and on grasshoppers also break new ground and form an excellent introduction (and easier to understand) account of the two groups for those who may find the more massive tomes of Wragge and Spradbury rather too off-putting. These Two volumes indeed fill a particular lacuna in the entomological literature.

For those embarking on the study of entomology these books are a must, and the experienced too will find something new and of interest in them.

It is a shame that the authors have been so ill-served by their publisher. Nevertheless, at the paperback price these books are a very good buy for their contents. The cost of the hardback is difficult to justify. SAC

When he saw this series announced in their forthcoming list in the middle of last year, your Editor wrote to the publicity department of the Cambridge University Press and offered to give a free page of press release about them in the Bulletin, if they would supply copy. No reply having been received within a month, he then rang them up and was informed that his request would be dealt with as a matter of urgency. No further communication was received and indeed we have not seen the series advertised anywhere. The only conclusion he can draw is that the CUP is thoroughly ashamed of their production and are rather hoping it will fade away. After all, our younger membership is just the sort of market they apparently had in mind for the series and free publicity is worth its weight in gold these days. When Messrs Warne made such a mess of the coloured plates of Beirne's *"British Pyralid and Plume Moths"* they reprinted them and supplied a copy free to every purchaser. Might we suggest the CUP do the same with this series? The contents are after all, in our opinion, well worth having. Editor

The Dragonflies of Great Britain and Ireland (Second Edition) by C. O. Hammond, revised by Robert Merritt, pp. 116, Harley Books, Colchester (1983), price £16.95.

The purpose of this book, like the first edition, is to provide the student with a colour guide to the identification of the British and Irish species. There can be no doubt that this is just what has been achieved.

Cyril Hammond's illustrations from the First Edition have been retained, with Roderick Dunn providing the additional illustrations for the Irish Damselfly *Coenagrion lunulatum* (Charp.) which was added to the list of species found in these islands in 1981. A full description of the species is included and the Key to larvae contains a suitable addition.

In producing this Edition, various corrections have been made, together with the inclusion of up-to-date Distribution Maps. These now have the page number of the species description included, which makes for much easier reference.

Inevitably there has been a change in nomenclature since the first edition was published in 1977. It is noted that the Black Darter Dragonfly has reverted to the name *danae* (Sulzer), having previously been referred to as *scoticum* (Donovan). The genus *Agrion* has been replaced with *Calopteryx* (another case of "musical chairs"?).

For anyone interested in this Order of insects, this book is a must. It is certainly the only reference work in print covering the identification of the British species in English. However, it is a pity that it was not possible to expand the contents to include a detailed discussion on the breeding habits, distribution/habitats and rearing methods. Perhaps, however, if this expansion had taken place it would have led to a very much higher price.

A review of the First Edition is to be found in *Bull. Amat. Ent. Soc.* Vol. 37, No. 319 (May 1978). DHRK

BOOK REVIEW

The Lepidoptera of the Orkney Islands by R I Lorimer. 103 pp. A5 format. 1 map. Published by E W Classey Ltd.

The first part of this list is a thorough and interesting account of the environment of Orkney. It includes the history of collecting, which covers hardly more than a century, as well as describing the habitats, both natural and man-made. As one would expect climate and weather in this northern outpost have a dominant effect on the fauna and to a far greater extent than we are used to in England. The absence of darkness during midsummer makes sugar a more useful collecting aid than light, and the ever present breeze makes the beating tray redundant in favour of the sweep net. The drastic effect that weather can have on a familiar species is shown by the author's recommendation that the Meadow Brown *Maniola jurtina* (L) should not be collected until the population shows recovery from the wet summers of 1978 and 1979. These general notes are completed with sections on predation and the possible origins of the Orkney lepidoptera after the last glacial advance. Interestingly the colonisation is by no means complete, five mainland species have become widespread on Orkney in the last eighty years.

The systematic list includes all lepidoptera and follows the order of Kloet and Hincks. The list is a professional piece of work and adequate space has been given to all families, on average only five species occupy each A5 page. I am pleased to see emergence dates given in almost all cases as well as an account of the habitat and the general area from which records have come. Orkney specimens often differ from other forms and a good description is given where this is the case. For a few species an account of the colonisation is given; nearly a page is devoted to the form *edda* of *Paradiarsia glareosa (Esper),* (Autumnal Rustic) posing an interesting discussion as to its origins and ecological significance.

The bibliography is extensive and includes references to the whole natural history of Orkney of which the lepidoptera are but a part. Mr Lorimer is to be complimented on the care and thought which has gone into this excellent publication. No entomological visitor to the Orkneys should be without a copy. Colin Hart

In Search of Heathland by Lee Chadwick. 220 pp. 8 plates. 3 foldout colour diagrams, numerous line drawings. A5 format. Published by Dobson Books Ltd, Durham.

This interesting and wide-ranging book is, as the name suggests, about heathland in the broadest sense. It is written in three parts. The first deals with the human aspects of heathlands including their history, the commonlands, the local heath dwellers, their industries and way of life.

The second part traces the history of the Suffolk coastal heaths, where the author lives, together with their geological formation and present rapid decline due to man's influence. There is much information here but it is scattered amongst historical quotations and short traditional poems . This makes the book difficult to read from a scientific point of view. Some sections contain careful and well written observations, for example about burying beetles *Necrophorus humator* or Wolf spiders *Pardosa* sp., while on the other hand all the lepidoptera are disposed of in just over four pages which includes a list of 150 species taken one summer at light. Coleoptera receive better treatment and although there is no systematic list, about a dozen species are mentioned with good descriptive passages and line drawings. Bees, wasps and grasshoppers have a section but it seems there are no flies to be found on this heathland.

The third part covers the other heathland areas of the Breck, Surrey, the New Forest and the Lizard Peninsula. These accounts are very readable and take the form of a conversation based travelogue. We hear of meetings with wardens and local officials and of searches for local plants and wildlife. There is less detail here but the enthusiasm of the writer is infectious and makes compelling reading transporting us perhaps to the ancient rides of the unenclosed New Forest where 300 year old trees give a sense of great antiquity. It is apparent that this book is intended for the general naturalist rather than the entomologist and it contains a wealth of information albeit rather scattered. The index helps in this respect as it is informative and runs to nineteen pages. The book is a sturdy paperback on good paper with bound sections held together by the inappropriately-named perfect binding. The system works well in this case except for the three fold-out sheets, two of which fell out during the course of this revue.

Colin Hart

How to write and Publish a Scientific Paper, by Robert A Day. Published by ISI Press, Philadelphia. 181 pp. Paperback $12, Hardback $18.

This is the second edition of the book, the first having sold more than 60,000 copies. This updated version has added chapters on electronic manuscript, writing book reviews and oral presentation. It is written in a most readable and often humorous style and should be compulsory reading for anyone intending to write a scientific paper for publication. Even for those writing articles for our entomological journals there is much information and guidance. It is practical and to the point and must be recommended as a reference book for all those entomologists with a literary bent. There are twenty-nine chapters and six appendices, each dealing with a particular aspect of the subject. They range from the preparation of a title and text, selection of illustrations, approaches to editors and printers, ordering reprints and the use of English and many other aspects with which the writer is faced in preparing a paper or writing a thesis. In the appendices are listed word abbreviations, words which are often mis-spelt, and words and expressions to avoid. There is a seven-page index.

PWC

Entomology: A Guide to Information Sources, by Pamela Gilbert and Chris J. Hamilton. 237 pp. Published by Mansell Publishing Ltd., 6 All Saints Street, London. 1983. Price £18.

This new publication contains a wealth of information on the entomological literature available and where to find it. In so vast a field of publication it is only possible for the authors to deal with the standard texts. They have included those works which have found to be most useful to themselves and to library users at the British Museum (Natural History) where Pamela Gilbert works. The eight chapters deal in turn with most aspects of the subject — History, Taxonomy, Identification, Collecting, Location of collections, Photographic material, Journals and monographs, Books and reviews, Libraries, Conferences, Newsletters, Societies' membership lists and services such as translation.

For anyone seeking an easy way to trace information, this book will prove invaluable. Our own Society's membership list is included and the newsletters of our study groups, also mention is made of our handbooks but for some reason our Bulletin is not included among the journals. This is primarily a book for librarians but will be a ready reference work for any entomologist seeking sources and the 1,305 entries are well indexed in 21 pages at the end of the book. PWC

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Maps and full details will appear in the August 1984 A.E.S. Bulletin.

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All enquiries to **Colin Hart**
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THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

EDITED BY

BRIAN O. C. GARDINER

The Amateur Entomologists' Society

(Founded in 1935)

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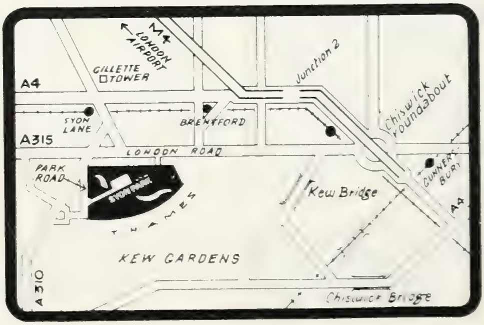

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AES
BULLETIN
No. 344

EDITORIAL

Both authors and other members may sometimes wonder why it takes so long for articles to be published in the Bulletin and I feel that an explanation is due. The Bulletin is a quarterly journal and takes three months to produce from the time the manuscript is despatched to our printers to when the postman pops it through members' letterboxes. Therefore no item can be published in less than three months and any item arriving within a week or so of an issue being sent off to the printers must inevitably have at least a six month waiting period. From this members will appreciate how difficult it is to include any up to the minute topical items in the Bulletin.

With the best will in the world, however, it is still impossible to include all items submitted after six months. Far from it. No editor can run any journal relying on material being recieved within the few weeks before submission date. At all times he must ideally have enough material on hand substantially to fill two or even three issues. Not only must he have time to edit manuscripts (which may require major alterations and consultation back with the author, not to mention retyping and organizing of Illustration) but also there must be diversity in the Bulletin and this may involve the holding over of one of two similar articles to a later issue. In fairness to authors I should like to state at this point that all articles are dated on receipt and the longer articles are published so far as possible in the order they have been received. Since most short notes are topical these are published as soon as possible and medium length articles (of around 1-3 pages) also, for reasons of printing efficiency and balance in the Bulletin. These therefore tend to get some priority over longer articles. There are also items for which priority of publication is given. These include all Council matter, book reviews (which are often later than I would wish them to be in any case) and topical items relevant to the time of year of the Bulletin issue in which they appear or which would become stale and pointless if held to a later issue.

While the editor can specify which items must appear, some discretion must be left to our printer. Manuscript pages submitted vary from the single line of a figure legend to a whole page of single-spaced type. One cannot give an accurate estimate of how many submitted typescript pages will fill an issue and an excess is therefore always sent to our printer. He chooses, from those articles not marked by me as priority, items which best fit the available layout of the Bulletin and material which might have appeared has then to be held over until the next issue when it will always appear.

I hope the above will not discourage members from submitting articles. In terms of time taken for publication the AES Bulletin still compares very favourably with other journals. I do know of one which has solved the delay problem, to some extent, by nearly doubling its size. Nice as this would be, in our case it is not affordable. Another ploy used by some journals to achieve fairly prompt publication is to have a very high (often over 50%) rejection rate. As the premier Amateur Society I do not feel that we should do this as in quite a few cases our Bulletin has published the first paper by a young Entomologist who has later gone on to a successful professional career. At this stage there should be encouragement and help, not disheartening rejection. I feel that members write for the pleasure and interest of other members rather than to be noticed by their rivals and to pile up papers to help in their careers, as do the professionals, who now have some 750 entomological journals to submit papers to.

I sincerely hope that my authors will continue to submit interesting articles to me. They will duly appear.

A LONDON SPECKLED WOOD

I live in a block of flats in a built-up area of west London about a half mile from the nearest park. I was therefore pleased and surprised to have a visit last year from a Speckled wood (*Pararge aegeria* L.) on a hot and sunny 14th August. It settled briefly on my second floor balcony before flying off down the street.

D. K. J. Withrington (7110)

MORE CLOUDED YELLOWS

Received too late for inclusion in our last issue, some more reports of Clouded yellows in 1983 have come in, as follows:-

14th August 1983: Clouded yellows were observed in built-up parts of London by Mr R C Price. At 12 noon he saw one flying north in his garden at Hammersmith and at 15.30 he saw another flying north-east over a recreation ground in Mill Hill.

16th October 1983: a Clouded yellow was seen by Mr S Berry at Harlington, west London.

At the end of August large numbers (up to 40) were seen in Devon, Dorset and Kent as reported by staff of the Nature Conservancy Council.

D. K. J. Withrington (7110)

THE HAMMOND AWARD

The winner of this award for the best article published in the Bulletin last year is Mr. M. Fuller (6566) for his article *Butterflies of Picket Wood* published on pages 130-143 of the August issue.

ANNUAL EXHIBITION

We are pleased to announce that this will once again be held in the Hounslow Civic Centre and the date is Saturday October 6th from 11.0 am to 5.0 pm. The entry fee will be 30p.

Last year the Centre authorities expressed concern at the (to them) unexpectedly large number of people attending, which they considered could be contravening the terms of their letting licence and hence safety regulations. We may therefore have to exercise some restraint on entry this year and would ask all members and friends to please obey any instructions from marshalls who will be on duty, and to be patient if entry has to be restricted for short periods.

A NEW DRAGONFLY BOOK

About to be published in France is a new book entitled *Guide des Libellules D'Europe et D'Afrique du Nord*. This will be of about 300 pages and have 40 colour plates. It is by three well-known French Entomologists, Messrs Jacques d'Aguilar, Jean-Louis Dommanget and René Préchac. The colour illustrations we have seen so far are excellent and there is no doubt that this book will fulfil a need for a knowledge of the Continental Dragonflies which of course were not covered in Cyril Hammond's work on the British species. The work is very reasonably priced and is available from Mons. J-L. Dommanget, 7, Rue Lamartine, 78390 Bois D'Arcy, France at a pre-publication price of FF 138 and thereafter FF 169, plus postage. (This is about £11.50-14.50).

C. L. Nissen (7002)

THE SOCIETY ENROLS ITS EIGHT THOUSANDTH MEMBER

On the 4th April, 1984 the Society's Registrar enrolled the 8,000th member of the Society, Dr. K. C. Greenwood, MB., of Pailton near Rugby. Over the forty nine years of its existence the annual average number of enrolments is just over 160.

HERTFORDSHIRE BUTTERFLIES ATLAS PROJECT

A set of provisional Butterfly distribution maps for Hertfordshire is to be published in the forthcoming 1984 Transactions of the Hertfordshire Natural History Society. From these it can be seen that there are many gaps and under-recorded species. Radical changes are occurring in the Hertfordshire countryside affecting butterfly populations. Many species are disappearing or declining in numbers. A few are, perhaps, increasing. In an effort to monitor these changes the Society intends to publish the Hertfordshire Butterfly Atlas in 1986/7, if significant additional field data can be acquired over the next three years.

It is proposed that a scheme of fieldwork be initiated, using a similar format to the recent successful bird surveys. This is based upon the 10 x 10 Km square divided into 2 x 2 Km tetrads (a 2½″ map), or parts thereof. Regional recorders will be established to cover each 10 x 10 Km square in the County and will co-ordinate a coverage by local recorders. Records will then be forwarded to North Hertfordshire Museums for collation and final Atlas production.

Casual records as well as lists from specific sites are required in a format that facilitates documentation down to a 2 x 2 Km tetrad. Any necessary form of confidentiality will be respected, if requested. However, records of rare species should be submitted to ensure that full data are available so that any threats to their habitats can be monitored and countered through existing biological data bank/conservation frameworks.

Offers of assistance and all post-1970 field records should be sent to me c/o Natural History Department, North Hertfordshire Museums, Old Fire Station, High Street, Baldock, Herts SG7 6AR.

Data regarding unpublished pre-1970 records and collections are also required with precise locations, dates and collectors.

Brian Sawford

THE NEW WEYMOUTH BUTTERFLY HOUSE

A new butterfly house, on the lines of the one at Syon Park (see *AES Bulletin* (1982) 41:12) was inaugurated by David Bellamy on April 18th last and will be open to the public until the end of October. Drawing on the experiences gained in running Syon, Clive Farrell and his associates have designed the immense glasshouse to imitate, so far as possible, a wet biotype from the humid tropics. Nice as it would have been also to have had some tall tropical trees in residence, as are accommodated at Kew and Cambridge Botanic gardens, we understand this was turned down on the planning grounds that part of the building would have been too high!

A particular feature at Weymouth is the use of water. This bubbles out of the ground (as it would in a tropical mud pool) and percolates with a pleasant tinkling sound over rocks to a rocklined pool. Indeed a significant area of the butterfly house is covered in water. As at Syon there was the usual variety of colourful tropical butterflies flitting around and feeding at real flowers, honey solution in coloured dishes, or, since some butterflies prefer it, tastefully arranged little piles of overripe fruit. Adjoining the main flight area is a separate glasshouse, of considerable size, where the larval stages may be viewed.

The Weymouth butterfly house is situated at the eastern side of the town in the Lodmoor Country park. This is an up-and-coming recreational complex whose development is being actively encouraged and helped by the local Council. To supplement the butterfly house there is a magnificent Sea life aquarium housing many living examples of the marine fauna to be found off the coast. There is a large car park and Weymouth pier and shops are within easy walking distance. For those who fancy a dip in the briny or a bit of sailing the sea is only a couple of hundred yards away and there are two excellent cafés to chose from. Definitely the place to go for a good day out with all the family.

Editor

THE SIXTH MIDLANDS ENTOMOLOGICAL EXHIBITION AND FAIR AT LEICESTER, 1984

Above all, Leicester, 1984, proudly featured . . . space! On Sunday, 8th April, the Granby Halls Sports Centre warmly welcomed us to a shiny-floored arena the size of a football pitch, complete with overhead T.V. lighting, and every required facility. A record total of some forty exhibitors and eighteen hundred visitors participated in a day of truly top league butterfly action.

This time, there was plenty of room to spread our wings in cool, unflustered, comfort. We could even have expanded a further 30% or 40% without overcrowding. The only fly in the ointment was the emission of a shrill alarm siren every time someone opened a side door. Apart from that, we could all wander uninterruptedly for hours among irresistible swarms of deadstock, livestock, equipment, books and congenial company.

The catchment area of support for Leicester is always impressive; this year, I even met friends from Inverness, Dublin, and Jersey. More notable still were the new appearances of two or three dealers from foreign countries, whose displays illustrated some of their own butterfly traditions. I feel it would be rather exciting to internationalise the atmosphere of our annual exhibitions more and more in this way, if prior advertising can stretch to it. How many English collectors know, for example, that the French almost exclusively house their insects in resilient glass-topped cartons of Paris manufacture, containing finely-ruled lining paper, long twangy pins, and small cornered glass bulbs of Beechwood Creosote? Fairly unfamiliar to us, as well, are their strongly patriotic leanings towards rare European *Parnassius*, and even rarer African and Madagascan *Charaxes*. Yet among the panorama of conventional 'English-style' tables, I found a single French one, of just that character, beautifully staged by an old colleague who I had not met since 1977. It was as unexpected and refreshing as the discovery of petits fours in a fish and chip shop!

Not that our regular abundance of common 'fish and chip' specimens represents an undesirable or unpalatable butterfly 'fare' (sorry, couldn't resist that one!). On the contrary, such low-priced, familiar, staples are welcome, and eagerly consumed by the majority of visitors. But if exotic foods can become widely communicated and accepted by the more open-mouthed British public, then exotic butterfly scenes should prove correspondingly interesting and instructive to the more openminded British entomologist. Collectors resident in other countries often follow different national idiosyncracies of insect presentation, preservation, and preference, and they can also usually offer desirable species which the average Englishman cannot obtain within his own social circle.

This admittedly concerns the specialist end of the market. In our context, while original or rare displays must up-grade the overall aesthetic quality of an exhibition, they may scarcely yield monetary gain for the exhibitors themselves. For example, one observes that impressive frames of rare *Agrias* and *Ornithoptera*, A.1. with full data, are universally admired, but seldom purchased. Moreover, the pleasing demonstration of a butterfly's (or even a butterfly enthusiast's) conservation greatly enriches the public mind, but cannot challenge the public pocket at all. Of course, every sincere naturalist is anxious to see worthy minority involvements tastefully catered for, but it is obvious that they must be affordable to their promoters. Thus, in British insect exhibitions, at least, les petits fours of the élite sometimes need to be financed by les grands fish and chips of the masses.

In general, U.S. and Continental butterfly markets, entomological expositions, or 'exchange days', as they are variously called, tend to be smaller, more elitist, and more frequent, specialising in rarer material. But we in Britain conspicuously, and I think, commendably, prefer to encourage the wide popularist approach. Indeed, our Leicester Fair is always very much 'sport for all', as the permanent athletic posters all around the centre walls could have been re-interpreted to indicate. In short, those 5p to 50p specimens and accessories, which ever-increasingly predominate on the trading tables, happily ensure that each visitor, from youngest to oldest, can afford to acquire, and show his friends, at least a few solid souvenirs of the occasion, if desired. Only the ultra-specialised six-legged gourmet need go hungry here.

I recall meeting one such person who was busy burning away at a particular passion which Leicester had lamentably failed to requite. 'Well,' he replied, 'I'm still looking for that perfect female of *Erebia altitudissima* from the very top of Mount Everest, only it must be the Christmas Day form with three bald heads and seven left feet.' 'Ah,' murmured I, with the gentle resignation of one who has faced nineteen thousand similar requests in the past. 'No, sir, I don't think you are going to enjoy this show at all!'

Nevertheless, many thousands of visitors will certainly enjoy it, year after year, and, for their sake, we once again owe our most grateful thanks to the devotion and efficiency of the organisers.

However, may my last word be on behalf of the butterflies themselves, purely as a personal sentiment. In this day and age, perhaps the ideal pinned specimen should appear to be crying out from its neatly labelled shrine: 'Dear public, I hope my exquisite designs and colours gladden your eyes. It matters little whether I'm common or rare, or even that I'm dead. What really matters is that my family lives on, and they need your help. *Please* don't let anyone make them homeless.'

Brian Wurzell (3718)

QUERY

Why are pests so rare? — If one studies the literature on pest control and economic reports which point out the millions of pounds worth of damage that is being done by certain insects one is driven to wonder if they really mean what they say or are really an excercise in propaganda by some advertising agency.

There are a number of (so-called) pest species which I have been trying for years to get stock of. I am constantly being told they are not to be found, or are too rare, or extinct, or only occur somewhere else. While this certainly does not apply universally (there is for instance little trouble in obtaining some pests, such as army worms or cockroaches) it seems to me that many pests, particularly the large (Rhinocerus beetles) and the beautiful (*Othreis*) have either been eliminated entirely, or they are no longer pests and present control measures, which of course add to the final cost to the consumer, are carried out purely on the basis of "precaution" or perhaps just inertia because it has always been done and not unnaturally the pesticide salesmen keep up the pressure by use of the hard sell.

Brian O. C. Gardiner (225)

REPORT OF THE COUNCIL FOR 1983

There has been a continuing increase in membership, the total for the year being 1797, our highest yet, though it should be borne in mind that this was the maximum and resignations, non-renewals, etc. usually occur later in the year. We have 8 Honorary Life, 33 Life, 36 Associate and 174 Junior members in our ranks. During the year D. Tozer, our adviser on Coleoptera, and R. A. Fry, Honorary Treasurer, were elected to Honorary Life membership for services rendered to the Society.

The Council met on six occasions in the year. After many years' worthy contribution, Col. A. M. Emmet retired from Council. Two new Council members have joined us, T. Knight and D. Reavey, and we have enjoyed the President's, E. W. Classey's, chairmanship during the year.

The Council will be meeting at a fresh venue, the National Liberal Club, as the Caxton Hall is closing. The Council first met at Caxton Hall 15th September 1961. Among ideas considered by Council have been ways of stimulating contributions from our members, services offered to the membership such as Field courses, Competitions and the celebration of our Golden Jubilee in 1985, and the possibility of a Society tie.

The Bulletin was published as four issues, edited by B. O. C. Gardiner. The Wants & Exchanges list supplemented each issue and other literature despatched included subscription, Exhibition and AGM notices; a new membership list and an index for the 1982 Bulletins, compiled by P. A. Sokoloff.

As always, publications have been regularly considered; some for revision, re-print, rewriting or new ones for publication. Fresh ideas and volunteer authors are always welcomed. This year we published 'Breeding the British Butterflies' by P. W. Cribb which has been well received.

At the AGM we announced the first 'Hammond Award' winner, Mr. R. Sutton for his article on the scent scales of male butterflies. Exhibits were encouraged to make our Conversation more enjoyable. It was encouraging to see so many at this important business meeting and we were rewarded with a stimulating talk plus profuse, indeed bizarre, exhibits and slides of the Ulu Temburong, Brunei, expedition given by Mr. T. Harman.

We again held our Annual Exhibition at Hounslow Civic Centre, which was attended by some 1,500 people. This year the main feature was the spinning of silk by the Lullingstone Silk Farm, a fascinating exhibit and we thank Mr. Robert Goodden for its loan. The competition for the Sir Eric Ansorge award flagged somewhat but this did not detract from the quality of the winner's exhibit. Hopefully, next year will see more exhibits in all sections. Again there have been clouds on the horizon with the threat of having to change our venue but our negotiations about crowd densities have been resolved for 1984.

The Council is most anxious to promote an efficient and economic organisation and reminds members that Officers have their functions indicated on the inside cover of the Bulletin. Perhaps it is worth reminding members that changes of address, non-delivery, etc. are the functions of the Registrar while general matters are dealt with by the Hon. Secretary. If replies are expected, a S. A. E. should be enclosed. If members have ideas and views about the Society, it would be encouraging to hear of them and articles are always welcome for the Bulletin.

It is our sad duty to record the death, early in 1983, of a respected member, Mr. R. Ferry, who was our Hon. Treasurer in 1947. His collection of Coleoptera and Lepidoptera has been bequeathed to the St. Albans Museum.

S. A. A. Painter
(Honorary Secretary)

REPORT OF THE TREASURER

I am very pleased to be able to report that the year ended 31st December 1983 was another successful year for the Society financially. The General fund income was up by over £500 to £9856 and expenditure up by over £1450 to £8840, the majority of the latter increase being largely due to the printing and distribution of a completely new membership list at a cost of £1130. In consequence, the General fund had a surplus of income over expenditure of £1016 and, with generally reduced inflation rates, it should be possible to maintain subscriptions at their current rates for at least another year, which is due in no small part to all those volunteers who run the Society on your behalf.

On the Publications front, sales were up by over £2300 to £6127. This was largely due to the increased sales of the new Silkmoth Rearers Handbook since the new edition was published in late 1982 and also good opening sales of our latest publication, Breeding the British Butterflies. After payment of the publication agent's commission and other expenses, the fund recorded a trading surplus of £1628 and the total value of the fund now stands at £23,478.

I should like to record my appreciation again to Roy Stallwood, my assistant Treasurer, for dealing with all your subscription renewals payments and to our Honorary Auditor, Tony Pickles of Robert W. Watson and Co., for his support in verifying the Society's accounts.

R. A. Fry
(Honorary Treasurer)

AMATEUR ENTOMOLOGISTS' SOCIETY
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st DECEMBER 1983

EXPENDITURE

1982 £		1983 £	1983 £
	Bulletin Costs		
104	Editorial	90	
3862	Printing	4000	
1600	Despatch	1808	
60	Indices	98	
			4846
	Membership Services		
—	Membership List	1062	
98	Wants/Exchange Lists	68	
			1130
	Administration		
252	Stationery & Notices	259	
131	Postage & Carriage	110	
689	Registrar's Fees	676	
215	Meeting Expenses	321	
40	Study Groups Support	45	
198	Depreciation	158	
50	Insurance	73	
61	Sundry Expenses	64	
			1706
32	Conservation		8
7392			8840
1929	Surplus Income to General Fund		1016
9321			9856

INCOME

1982 £		1983 £	1983 £
	Subscriptions		
5604	Ordinary & Affiliate	5931	
627	Junior	522	
111	Life Membership Fund	123	
			6576
	Other Income (Net)		
608	Donations		670
197	Enrolment Fees		282
	Investment Incomes (Gross)		
224	Dividends etc.	170	
523	National Savings Interest	562	
			732
678	Advertising Revenue	817	
715	Annual Exhibition	735	
34	Badges & Tie Pins	44	
			1596
9321			9856

PUBLICATIONS TRADING ACCOUNT FOR THE YEAR ENDED 31st DECEMBER 1983

1982 £		1983 £	1983 £	1982 £		1983 £	1983 £
	New and Revised Publications Costs			3775	**Sales (Gross)**	6127	
12	Editorial	7		9097	Increase in Value of Stocks	—	
10348	Printing	1144		7000	Transfer from Hammond Trust Fund	—	
			1151				
1510	Selling and Other Expenses		2451				6127
—	Decrease in Value of Stocks		897				
11870			4499				
	TRADING SURPLUS to						
8002	Publications Fund		1628				
19872			6127	19872			6127

R.A. FRY, Hon. Treasurer

The Report of the Auditors to the Members of The Amateur Entomologists' Society

We have examined the records of the Amateur Entomologists' Society, and in our opinion the Balance Sheet gives a true and fair view of the state of affairs on 31st December 1983 and of the Income and Expenditure for the year ended on that date.

A.J. PICKLES F.C.A

ROBERT W. WATSON & CO.
91/92 HIGH STREET,
LYMINGTON, HANTS.

BALANCE SHEET AS AT 31st DECEMBER 1983

1982			1983	
£	£		£	£
		General Funds		
		Balance at 1st		
4733		January 1983	6662	
		Add: Surplus Income		
1929		for year	1016	
	6662			7678
	1638	Life Membership Fund		1950
	187	Ansorge Award Fund		197
	17049	Hammond Trust Fund		18824
		Creditors		
1706		Advance Subscriptions	1320	
303		Advance Donations	97	
36		Others	—	
	2045			1417
	27581			30066

1982			1983	
£	£		£	£
		Fixed Assets		
		Office Equipment at		
1162		Cost:	1162	
		Less Depreciation		
374		to date	532	
	788			630
		Investments at Cost		
		£1997.30 Treasury		
1650		8½% 1984/86	1650	
		£712.24 Treasury		
660		12¾% 1995	660	
		£1299.57 Treasury		
740		9½% 1998	1100	
150		109 M. & G. Charifund Income Units	150	
21352		National Savings Investment Account	25139	
	24552			28699
		Current Assets		
124		Stocks at Cost	66	
581		Sundry Debtors	563	
		Cash at Bank:		
1476		Current Account	48	
60		Cash in Hand	60	
	2241			737
	27581			30066

PUBLICATIONS FUND AT 31st DECEMBER 1983

1982 £	£		1983 £	£
		Balance at 1st January 1983		
12972			21464	
8002		Add: Trading Surplus for the year	1628	
490		National Savings Bank Interest	386	
	21464			23478
	1510	**Creditors**		2450
	22974			25928

1982 £	£		1983 £	£
		Investments		
	2682	National Savings Bank Investment Account		5668
		Current Assets		
15644		Stocks at lower of cost or valuation	14747	
3205		Sundry Debtors	4877	
1443		Cash at Bank	636	
	20292			20260
	22974			25928

STUDY GROUPS FUND

1982 £		1983 £
	Balance at 1st January 1983	
296		423
127	Add: Surplus Income for Year/(Deficit)	(6)
—	Creditors	—
423		417

1982 £		1983 £
	Current Assets	
—	Debtors	—
423	Cash at Bank	417
423		417

REPORT OF THE INSECT BEHAVIOUR AND ANT STUDY GROUP

Membership

1982 ended with a membership of 39 and after all renewals were gathered in, 1983 started with 30 members. The group increased its membership during the year by 25 members which meant that the growth of the group was 83%. This was accomplished in the following ways. Leicester Exhibition 2 New Members, AES 12 New Members and advertising 11 New Members. Out of the 55 members at the end of 1983 there were 46 AES Members, 4 Subscribers, 3 Overseas Members and 2 Associate Members. Membership wise 1983 proved to be very successful and it is hoped that 1984 will be equally as good if not better.

Publications

The full quota of four bulletins were produced. The bulletins contained various articles and group reports. A supplement to the Newsletter was produced containing field meeting information. The one problem that affects most groups these days is the quantity of articles for inclusion in the Newsletters. The I.B.A.S.G. tried during 1983 to ease this problem with some success, but there is a long way to go yet.

Meetings

1983 started with the AES Annual General Meeting where the Secretary presented the I.B.A.S.G.'s 1982 Report. The next venue was the Leicester Exhibition which was visited for the first time by the I.B.A.S.G. The group enjoyed the day at Leicester and was successful in bringing to the attention of many people the existence of the group. The I.B.A.S.G.'s Annual General Meeting was held on 14th May 1983 to which 6 people attended. During 1983 there were three field meetings. The first was held on 26th June at the Long Man of Wilmington on the South Downs where 9 people attended. The second was held on 3rd July at Bedgebury Pinetum where 5 people attended. The third field meeting was held on 14th August at Ranmoor Common in Surrey where 4 people attended. The last meeting of the year was the AES Exhbition. The I.B.A.S.G. had six tables and there were a total of 8 people who helped at the group's tables. The day spent there proved very successful with excellent displays of Ants and photographs.

Finances

1983 started with a general fund of £100.46. The income for the year was £141.49 and the total expenditure was £106.89. This meant that the general fund at the end of 1983 was £139.56. Financially the group is sound and shows no requirements for subscription increases.

Committee

1983 saw a reduction in the committee of two. The positions lost were Joint Advertising Secretary and Treasurer. The position of Joint Advertising

Secretary was cancelled and replaced by Advertising Secretary. The Treasurer's position was continued by Malcolm Parsons with a second authorised signatory of Andy Callow. This situation would be fully discussed at the I.B.A.S.G.'s 1984 Annual General Meeting. It must be said at this point that the I.B.A.S.G. is very thankful to the work that both Chris Peace and Paul Brock did on the behalf of the group.

In conclusion 1983 was a very successful and active year. Despite the problems of articles for the group's bulletins, the group shows a very promising future. It is hoped that the growth of the I.B.A.S.G. will continue along the 1983 lines.

M. M. Parsons
(Honorary Secretary)

REPORT OF THE CONSERVATION COMMITTEE

Committee work and representation

The Committee met on 20th November, 1983 and on 19th February, 1984 and sent a Representative to each recent meeting of the J.C.C.B.I. Butterfly Year, which ended during the previous twelve months, has been followed by much activity on the part of the World Wildlife Fund (U.K.) which has been responsible for allocation of the proceeds and for raising industrial sponsorships which, at £60,000, dwarf those initial proceeds. We felt that communications were unsatisfactory during this work, particularly with regard to information on Butterfly Year accounts and to consultations over the allocation of monies for the twenty-nine projects which have now been approved.

We are glad to report the appointment of a Field Meetings Secretary, Mr. P. J. Holdaway, who has been co-opted to the Committee. It has been decided that the posts of Habitat Conservation Officer and Insect Conservation News Editor should be done by separate officers. Despite the desirability of both posts having the same physical base, each is a major task by the standards of an amateur society and one person cannot easily develop them in response to growing requirements.

It seems appropriate here to sound a word of warning. This Committee and the former Conservation Group have worked hard and long to increase awareness of the place of insects and not just the most popular species in conservation. We were expressing ideas about matters such as urban conservation and the dangers of habitat isolation long before they became widely appreciated. It is therefore sad to find that our name does not appear in a number of recently published books and information sheets which purport to list or to give credit to a range of organisations, including those involved in insect conservation. This indicates that our ability to be heard and to be accorded a proper role does not match the efforts which we are expending. Now that funds are pouring into insect conservation, this may begin to mean that the views of amateur entomologists will be increasingly submerged amidst projects which have more to do with the generation of publishable data than with the satisfactory conservation of insect habitats.

Publications and exhibits

Issues 8 and 9 of Insect Conservation News have been produced, with a small rise in readership. The method of paying subscriptions seems to remain an obstacle to a substantial rise. We produced two exhibition stands, one for the North London Wildlife Day in June 1983 and the other at this Society's Annual Exhibition. The theme of the latter was the story of Ditchling Common.

Field meetings

Our normal programme of meetings remained in suspension, but Mr. Holdaway's appointment has allowed a 1984 season to be organised. Our special task work project at Ditchling Common continued with a further three valuable sessions.

Individual site protection

ICN carries full details of site protection. We were involved again with Borstal Marsh, Kent, where a new (fortunately unsuccessful) development scheme was put before the authorities. Events at Sprotbrough Quarry, S. Yorks. and at a wood near Brentwood, Essex also demanded our rapid response, while, in a more ordered way, we contributed to a conservation management plan for Hounslow Heath, Middlesex and continued our task work at Ditchling Common, E. Sussex as already mentioned.

David Lonsdale

REPORT OF THE SOCIETY'S REPRESENTATIVE ON THE JOINT COMMITTEE FOR THE CONSERVATION OF BRITISH INSECTS

There have been three meetings in the past twelve months, Dr Lonsdale and myself have attended one each and one meeting we both attended.

The committee wishes to issue a Code of Practice concerning the re-establishment of insect species. A draft document of some nine pages was discussed at length and various amendments were made. Finally, after compromise and general approval the paper has been sent to the Royal Society for Nature Conservation for their comments before being published.

The JCCBI is a member of Wildlife Link Committee and our representative, Dr Whalley, has issued a report for this year, from which the following comments are taken. Although the time spent on insect related matters has been small, Wildlife Link is an important and respected organisation with a powerful lobby for conservation interests. It is also concerned with work on habitat protection which directly benefits insect groups and currently with the Forestry Commission Broadleaves Policy review and the rescheduling of SSSI's by the Nature Conservancy Council. Dr Whalley went on to say that the entomological view was not getting enough attention and proposed the formation of a sub-committee to organise proper representation. He particularly wanted amateur entomologists involved, and by implication the AES, to which Dr Lonsdale agreed.

The AES council requested, through its representative, a financial statement showing the fate of the money raised during Butterfly Year. The long reply explained that all the money had been passed to the World Wildlife Fund, who agreed to act as bankers for the relatively large amount collected, and it was now being adminstrated by the Fund. The WWF policy in these matters is to grant aid conservation schemes up to a maximum of 50% of the cost and this means that it is difficult to itemise projects that have directly benefited from Butterfly Year subscriptions. Subsequently more information has become available listing larger donations and monies collected for specific purposes, also a list of smaller projects and surveys aided. At a later meeting it was agreed that money should be raised for insects other than butterflies to try to bring to public notice the need for a fair insect conservation policy.

The Committee's surveys officer, Dr Warren, has been active in surveying the Marsh Fritillary in England and Wales. He reports about 200 English colonies but the real stronghold of this insect is in Wales. He also proposes surveys of the High brown fritillary just from records, the Swallowtail and the Heath fritillary in a newly discovered area. There have been some minor problems at the National Trust site where it is proposed to re-introduce the Large blue, but correcting this should not prove difficult. A large donation has been received specially to aid this project so we hope to see some progress soon. Mr Kennard commented that this re-introduction could take five years to be successful.

The Committee has also dealt with much correspondence and short items of regional interest.

Colin Hart

REPORT OF THE EEG FOR 1983

The Group enjoyed a successful year and continued to flourish, ending the year with 282 members.

Activities included the continued production of the quarterly *Newsletter*, and the popular *Monthly Information Sheet*, which provides members with an effective medium for buying, selling and exchanging livestock - particularly valuable during the hectic summer months. The Group's Livestock Buyers' Cooperative imported a wide range of species, many of which are seldom offered by dealers, and these were offered to members at little more than cost price.

The Group once again staged an exhibit at the AES Exhibition, although the impact of this was marred to some extent by its situation (off the main hall) which combined with a large crowd to produce a human traffic jam!

At the end of the year, Brian Morris was forced by pressure of other work to resign the editorship of the *Newsletter*, and this was resumed by Chris Hamilton who had launched the Group in embryonic form some 16 years before.

On the financial side, the Group's expenditure for the year exceeded income due to rising costs, and subscription rates were therefore raised marginally for 1984. In recognition of the AES support grant which the Group receives, AES members continue to enjoy a reduced EEG subscription rate, making it even better value.

Chris Esbacher
(Honorary Secretary)

UNWORLDLY STICK INSECT

A Peter Mitchel, writing a musical review for *The Cambridge Evening News*, knows something we entomologists do not: The appearance of a stick insect from another planet. He stated that 'A laidback Los Angeles guitarist was entertaining as much for his unusual ability and unusual instruments... He played an assortment of slide guitars ending up with something that resembled an extra-terrestrial stick insect.'

TWO BEETLES NEW TO WALES

A carnivorous beetle, not previously recorded in Great Britain has recently been imported from Belgium and released by the Forestry Commission amongst its conifer plantations in Wales. The reason for this is that this beetle, *Rhizophagus grandis*, feeds on the larvae of the Great spruce bark beetle, *Dendroctonus micans*, which has apparently been devastating the conifer plantations. Neither of these beetles appear in the 1977 edition of Kloet & Hinck's *Checklist*, so both may be considered as recent introductions and new to the British list. We understand the *R. grandis* has been successful in controlling outbreaks of *D. micans* in both the Soviet Union and in Belgium and that the Forestry Commission is busy breeding further supplies.

Editor.

BOOK REVIEW

Ingenious Insects by Anthony Wooton. Quarto, pp. 47. J. M. Dent, London. Price, hardback, £4.95.

The chapter headings read like a 19th century work of Duncan: Masters of disguise; Fantastic feeders; Architects and Artisans. They provide a general outline of the diversity of insect form and function with occasional specific examples. I found the illustrations, both colour and b/w, by Mick Loates, very sympathetic, especially the larger than life Privet hawkmoth larvae, although I was amused to see a whole page picture of a grey wagtail chasing a Mayfly - the tailpiece on the adjoining page of text! A book for a school, the language for a well-read 12 year old, but content for a curious naturalist rather than an aroused entomologist.

S. A. A. Painter

BUTTERFLIES OF SAUDI ARABIA AND ITS NEIGHBOURS by Torben Larsen.

Published by Stacey International. 1984. 160 pp. Fully illustrated with colour including 23 plates of set butterflies. Price £22.00.

Opportunities to visit and collect in Arabia are probably limited to those working in the Gulf States on the many projects carried out by International companies. This book will be invaluable to any with an interest in the butterflies of the region. It is a beautiful book with fine illustrations, a very readable text and extremely well presented. The author is a Dane who has worked in the Near East and has made a series of special field trips to study the butterflies of the Arabian peninsula, having been sponsored by the Carlsberg Foundation and others. The text is interspersed with photographs in colour of the butterflies in their natural state, some being so depicted for the first time. The opening chapters deal with the biology of the order, followed by a long chapter describing the Arabian species under their families. There are then short chapters on variation and behaviour, enemies and defence, habitat, migration, distribution, conservation, collecting, breeding and photographing. There is a short chapter on the species which are economic pests, the whole making fascinating reading. The plates of set specimens depict 477 examples of the 148 species and the check list indicates the States in Arabia from which they have been recorded. There is a short forword by Prince Khalid and a preface by Professor W. Bütticker, editor of the series on the fauna of Saudi Arabia, of which this book is Volume 5.

Many of the species of the area derive from Africa, Arabia being separated from that continent by the Red Sea. The author has given all the species English names, as pointless as for the majority of species named by Higgins and Riley in their handbook of the European butterflies. Many of the names are quite bizarre - Philby's Cupid, the African Joker, Blue-spotted Arab and the Pomegranate Playboy, to name a few. More annoying is the use of new names for species which have been already named in other literature; this can only lead to confusion. Examples are - the Long-tailed blue which becomes the Pea blue; the Desert Black-tip for the Greenish Black-tip; the Tiny Orange-tip for the Desert Orange-tip; the Balkan Pierrot for the Little Tiger blue.

This is a minor criticism of a book which can only be praised for the standard which it sets.

PWC

The Moths & Butterflies of Great Britain and Ireland. Volume 10.

(Noctuidae Part II and Agarastidae.) By R. F. Bretherton, B. Goater and R. J. Lorimer. Pp. 459, 13 colour plates. Harley Books, Colchester, 1983. Price £40.00

When I reviewed Vol. 9 of this series in May 1980 (*Bull. amat. ent. Soc.* Vol. 39. pp. 70-71), I did not expect that it would be four years before the next volume would be published. However it is certainly worth waiting for. The series, edited by John Heath and Maitland Emmet, has had a period of difficulty but now seems to be safe with the new publishers, Harley Books, and already Vol. 2 of the series has been promised for this year.

Chapter I of Vol. 10 has been written by R. F. Bretherton and deals in detail with the migration of lepidoptera into and out of the British Isles. Species recorded as immigrants are listed, historical notes, the establishment of new species and other facets of the subject are considered and Mr. Bretherton must be congratulated on this masterly work on a subject with which he has been associated for very many years.

The second part of the volume follows the format of Volume 9, continuing the classification and descriptions of the Noctuidae from the Cucullinae to the Hypeninae and the one recorded migrant of the Agarastidae.

Subfamilies are described and a key follows for the imagines of the species in the subfamily. Then each genus is described, followed by the description of the species within it - the scientific and English name; synonyms; type locality; a description of the imago with reference to the plate illustrating it; the life history (ovum, larva, pabula, pupa) and, finally, distribution with a map corrected up to 1980.

Where relevant, the history of the species in Britain is included and these notes make fascinating reading. Where closely related species need separation on factors other than superficial characteristics, there are line drawings of genitalia or key points to note on wing patterns, etc.

The colour plates, illustrated by Brian Hargreaves, are excellent and depict each species described with some of the variant forms referred to in the text. The textual drawings are by Maureen Lane and Brenda Jarman. The paper, type face and production cannot be faulted and seem an improvement on the high standard set in Vol. 9.

As in Volume 9, there are copious references in the bibliographies following the sections. There is a detailed index of species and one of plants. This latter should be useful for those interested in plant/insect associations and will act as a guide to identification where the foodplant is known.

As stated previously, this series will serve the British lepidopterist for the foreseeable future, as did R. South's volumes in the past, and the price must be considered an investment if one is a serious student of our British lepidopterous fauna. Good books today are expensive but so are most tools of one's trade or hobby.

PWC

PONTIA DAPLIDICE L.: THE BATH WHITE

In his note entitled 'Migrants in Kent 1983' (*Bull. Amat. ent. Soc.* 43:16), Mr Tony Rouse records that at Greatstone in August he saw 'Two suspected Bath whites on the same day, but was unable to confirm it as I didn't have a net with me.' He adds that 'They were flying in front gardens of cottages on the beach, and as no Marbled whites inhabit the area I can only assume that they were Bath whites.'

With all due respect, I must point out that the Marbled white does occur in that area, and has moreover been repeatedly observed by myself and others in Greatstone itself. On the other hand, so far as I am aware, more than 30 years have elapsed since the date of the last confirmed record of occurrence in Kent of the Bath white. That was when one was captured at Acol on 30 August 1950 and in which year there were reliable reports of four others in the County.

J. M. Chalmers-Hunt (1653)

RECORDING MACROLEPIDOPTERA IN THE NEW FOREST DURING JULY 1982

The principal objective of our visit was to sample macrolepidoptera in two well defined habitats within the New Forest area, using orthodox sampling techniques. Light trap sampling was conducted over a two night period, and we feel that the results obtained are fairly indicative of the species present in the selected areas, and for the time of year.

Apparatus

A 300 watt blended mercury vapour lamp was used and this was operated by a 1.5 kva portable 4-stroke generator with usual assemblage of collecting and recording apparatus. The lamp was used in conjunction with a white sheet placed on the ground. Sugaring was also carried out, and this was applied to various trees and posts in the nearby vicinity.

With the light records, species were determined and counted on arrival using a notebook entry system. When activity became too congested the more common species were recorded approximately. On arrival a suitable site was selected representing an upland heath type habitat (in contrast to lowland deciduous woodland type habitat).

Site 1. Turf Hill (Grid ref. S.U. 205/175)

Managed by the Forestry Commission and comprising of a large area of upland chalk soils, windblown sands and peat bog. Dominant vegetation consisting of Heather (*Calluna vulgaris*), bog mosses (*Sphagnum spp.*) various upland grasses, Birch (*Betula pubescens*), Pendunculate Oak (*Quercus spp.*) and Hawthorn (*Crataegus monogyna*) afforested with Scots Pine (*Pinus sylvestris*), Lodgepole Pine (*Pinus contorta*) and Norway Spruce (*Picea abies*). The lamp was situated in a sheltered firebreak running NW/SE at demarcation of woodland/Open Heath zone, giving maximum advantage to cover both sites. Weather conditions were warm and humid with an overcast sky and mild north westerly breeze. Sampling started at 9.30 pm and ceased at 1.30 am.

List of Species recorded at Turf Hill, July 9th, 1982

Thyatira batis L. 4. *Habrosyne pyritoides* Hufn. 20 (5 at sugar). *Cyclophora linearia* Hb. 12. *Xanthorhoe fluctuata* L. ssp. *fluctuata* L. 30. *Xanthorhoe montanata* D&S. ssp. *montanata* D&S. 100. *Camptogramma bilineata* ssp. *bilineata* L. 12. *Mesoleuca albicillata* Hb. 3. *Chloroclysta truncata* Hufn. Common. *Thera firmata* Hb. 25. *Eupithecia exiguata* Hb. ssp. *exiguata* Hb. 2. *Chloroclystis v-ata* Haw. 6. *Lomaspilis marginata* L. 2. *Opisthograptis luteolata* L. 200. *Ourapteryx sambucaria* L. 2. *Biston betularia* L. 20 *f. carbonaria* Jord. 4. *Peridbatodes rhomboidaria* D&S. 40. *Boarmia roboraria* D&S. 4 (One at sugar). *Ectropis bistortata* Goeze. 4 *Campaea margaritata* L. 2. *Hyloicus pinastri* L. 8. *Laothoe populi* L. 2. *Dielephila elpenor* L. 2. *Ptilidon capucina* L. One. *Euproctis similis* fuessl. 5. *Lymantria monacha* L. 2. *Eilema complana* L. 10. *Eilema lurideola* Zinck. 45. *Spilosoma lubricipeda* L. 9. *Phragmatobia fuliginosa* L. ssp. *Fuliginosa* L. 12. *Agrotis exclamations* L. Common (65 at sugar). *Axylia putris* L. 40 (8 at sugar). *Ochropleura plecta*

L. 3. *Noctua pronuba* L. Common (100 at sugar). *Noctua comes* l. 35 (4 at sugar). *Noctua fimbriata* Schreb. 8 (2 at sugar). *Lycophotia porphyrea* D&S. Extremely Common. *Peridroma saucia* Hb. (One at sugar). *Xestia c-nigrum* l. 9. *Xestia triangulum* Hufn. Common. *Xestia xanthographa* D&S. (50 at sugar). *Melanchra persicariae* L. 4. *Hadena rivularis* Fabr. 3. *Mythimna pallens* L. Common (30 at sugar). *Parastichtis suspecta* Hb. 3. *Acronicta megacephala* D&S. 7. *Cryphia domestica* Hufn. 2. *Acronicta leporina* L. 8. *Phlogophora meticulosa* L. (5 at sugar). *Cosmia trapezina* L. 30. *Apamea monoglypha* L. Common (100 at sugar). *Euplexia lucipara* L. (2 at sugar). *Mesapamea secalis* L. Common (45 at sugar). *Colocasia coryli* L. Common. *Autographa gamma* L. 6. *Scoliopteryx libatrix* L. (3 at sugar). *Laspeyria flexula* D&S. 4. *Hermania tarsipennalis* Triet. 38. *Zeuzera pyrina* L. 2.

Site 2. Minstead (Grid ref. S.U.295/112.)

Site selected at random in lowland deciduous woodland, with Penduculate Oak (*Quercus spp.*), Birch (*Betula pubescens*), Beech (*Fagus spp.*) and mixed scrub. Met conditions were mild and dry with scattered cloud cover. At approximately 11.30 pm a thick mist was evident, but this did not detract insect activity. Sampling started at 9.30 pm and ceased 12.15 am due to a sudden drop in temperature.

List of Species recorded at Minstead July 10th, 1982

Habrosyne pyritoides Hufn. 8 (3 at sugar). *Xanthorhoe fluctuata* L. ssp. *fluctuata* L. 32. *Xanthorhoe montanata* D&S. ssp. *montanata* D&S. 20. *Xanthorhoe spadiceara* D&S. 10. *Chloroclysta truncata* Hufn. Common. *Eupithecia exiguata* ssp. *exiguata* HB. 30. *Eupithecia venosata* Fabr. ssp. *venosata* Fabr. 2. *Opisthograptis luteolata* L. Common. *Comibaena bajularia* D&S. (*pustulata Hufn.*) One. *Ourapteryx sambucaria* L. 7. *Biston betularia* L. f. *carbonaria* Jord. 9. *Peribatodes rhomboidaria* D&S. Common. *Ectropis bistortata* Goeze. 5. *Selenia dentaria* D&S. One. *Hyloicus pinastri* L. 5. *Laothoe populi* L. 2. *Eligmodonta ziczac* L. 5. *Pterostoma palpina* L. 2. *Stauropus fagi* L. 6. *Euproctis similis* fuessl. 2. *Lymantra monacha* L. 7. *Eilema complana* L. 45. *Eilema lurideola* Zinck. 36. *Cybosia mesomella* L. 12. *Spilosoma lubricepeda* L. 6. *Phragmatobia fuliginosa* L. ssp. *fuliginosa* L. 30. *Agrotis exclamations* L. Common (18 at sugar). *Agrotis puta* Hb. ssp. *puta* Hb. Common. *Ochropleura plecta* L. 17. *Noctua pronuba* L. Extremely common (Approximately 200 at sugar). *Noctua comes* Hb. Common (5 at sugar). *Hadena rivularis* Fabr. 2. *Mythimna pallens* L. Common. *Acronicta aceris* L. 3. *Acronicta leporina* L. 2. *Lycophotia porphyrea* D&S. 20. *Cryphia domestica* Hufn. 25. *Apamea secalis* L. Common (45 at sugar). *Amphipyra pyramidea* L. (8 at sugar). *Amphipyra berbera* Rungs. ssp. *svenssoni* Fletch. (2 at sugar). *Thalpophila matura* Hufn. (2 at sugar). *Phlogophora meticulosa* l. 7. *Ipimorpha subtusa* D&S. 3. *Erimobia ochroleuca* D&S. One. *Colocasia corylia* L. 5. *Diachrysia chrysitis* L. 15. *Autographa gamme* L. 35. *Catocala sponsa* L. (5 at sugar). *Scoliopteryx libatrix* L. 2.

M. N. McCrea (7379)
D. Cooper

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THE DRAGONFLIES (ODONATA) OF HARROW ON THE HILL

Introduction

The aim of this work is to provide a species list, with some ideas about the numbers, of the Dragonflies resident in Harrow on the Hill in 1983. I was encouraged to write after noticing several new species over the past four years, and also because there are still considerable gaps in our knowledge of Dragonfly distribution.

SPECIES LIST

Sub-order	*Family*	*Genus*	*Species*
Zygoptera	Coenagriidae	*Enallagma* Charpentier 1840	*cythigerum* Charpentier 1840
		Ishnura Charpentier 1840	*elegans* Van der Linden 1820
	Lestidae	*Lestes* Leach 1815	*sponsa* Hanseman 1823
	Agriidae	*Agrion* Fabricius 1775	*splendens* Harris 1776
Anisoptera	Aeshnidae	*Aeshna* Fabricius 1775	*cyanea* Müller 1764
			grandis Linnaeus 1758
			juncea Linnaeus 1758
		Anax Leach 1815	*imperator* Leach 1815
	Libellulidae	*Libellula* Linnaeus 1758	*depressa* Linneaus 1758
		Sympetrum Newman 1833	*striolatum* Charpentier 1840

NOTES ON SPECIES

(The months given are those with most insects on the wing. They do not mark the boundaries of the adult's season.)

Enallagma cythigerum — the common blue damselfly
June, July, August
. . . can be seen skimming over water in flocks of 10 to 20.

Ishnura elegans — the blue tailed damselfly
June, July, August
England's commonest damselfly can be seen amongst the reeds in similar numbers to *E. cythigerum*.

Lestes sponsa — the emerald damselfly
July, August
. . . a larger damselfly seen on fewer occasions than *E. cythigerum* or *I. elegans*.

Agrion splendens — the banded agrion
This species, preferring fast flowing streams, where it outnumbers other damselflies, is seen on few occasions.

Aeshna cyanea — the southern hawker

Aeshna grandis — the brown hawker
Aeshna juncea — the common hawker
Anax imperator — the emperor dragonfly
July, August

Our four large hawker dragonflies are well established and several specimens of each can be seen 'hawking' at any one time, over a limited area of water. They can often be seen well into September. *A. cyanea* usually being the last to go. This green hawker is also the most inquisitive dragonfly, often approaching to within a metre of the unconcealed observer.

Libellula depressa — the broad-bodied chaser
June, July
Two or three may be seen at any one time.

Sympetrum striolatum — the ruddy darter
July, August, September
Like *L. depressa,* the same place is used as a rest and look out post for a number of days. Half a dozen or so can be seen congregating in the same area, resting on the tips of fallen twigs.

CONCLUSION

I hope that this will prove to be a reliable record, which can be reviewed every so often. It is interesting to note that in this year the late Cyril O. Hammond's 'The Dragonflies of Great Britain and Ireland' has been revised by Robert Merritt. (This being the main identification work in print, was used for the identification of the aforementioned insects.) The considerable additions to the distribution maps reflects an increasigng interest and awareness of dragonflies, and, it is reasonable to assume, in other fields of insect amd animal life.

NOTE.
Harrow on the Hill can be seen in the 10 km grid square 5118 (of National grid).

David A. Crofts

BEHAVIOUR OF *IPIMORPHA RETUSA* L. (THE DOUBLE KIDNEY MOTH)

This widespread, but rather local moth, has always eluded me, despite much searching. In early August, 1983, I was camping on the banks of a small tributary of Afon Mawddach near Dolgellau (mid-Wales) Alongside the river, and in amongst alder and sallow bushes, were a number of wide ditches with very slow moving water. Whilst strolling along the banks of these ditches dusking" for the blue-bordered carpet, (*Plemyria rubiginata* D & S), I netted a small noctuid flying over the surface of the water, which proved to be *retusa.* Examining the ditch with renewed interest several *retusa* were seen patrolling along the ditch, flying 12-18 inches above the surface of the water — the flight pattern being both fast and erratic. Eight were netted within ten minutes by balancing precariously on a rock in the middle of the ditch, and squinting into the gloom waiting for a moth to appear. The ratio of moths to wet feet on the first night was around 2:1. The ditches were visited on the next three nights, and *retusa* was seen each time. The flight time was around 20 minutes, at dusk. None were seen flying over "dry land", and none could be seen after dark (with the aid of a Tilley lamp!). An actinic lamp was run on the banks of the ditch, but no *retusa* were taken. All those netted were males, and no females were seen. Presumably some of the patrolling males would fly into the sallows to find a female, but observations on this point were difficult to make due to the poor light and speed of flight. I would be interested to hear of other members' observations on this moth.

Paul Sokoloff (4456)

THE COMMON YELLOW DUNG-FLY (*Scathophaga stercoraria* L.)

Introduction

Most amateur field naturalists will be familiar with the medium-sized, furry orange flies to be found in large numbers around fresh dung deposits in most environments. These members of the family *Scathophagidae* are dependent on dung throughout their life-cycles with different species favouring different habitats on excrementous substances. The confirmed connections between dung-loving Dipterans and certain diseases in farm livestock mean that any study of the dung community can be particularly satisfying and worth while to those whose interest is in the "applied" aspects of entomological science. This article deals with just one coprophilic species from the lower cattle grazed areas.

The Common Yellow Dung-fly itself has never been regarded as an insect vector of disease but is nevertheless a significant member of the cow dung community. Cotterell (1920) suggested that, since the vicious predatory Yellow Dung-fly adults act as a natural check on the populations of other species locally, these could come to be utilised internationally to control the numbers of specific pest species; this is, as a 'biological control'. A short discussion of *S. stercoraria*'s suitability as a control, as now seen 60 years or so after Cotterell, follows notes on the life history and habits of the species.

Identifying the Species

Adult Scathophagids can most easily be identified down to family level using keys by Unwin (1981) or Colyer and Hammond (1978) and then by the more detailed tables of Collin (1958) to species. Larvae, which are to be found only in dung, are covered to family by the key of Brindle and Smith (1978). A far simpler key by Skidmore (*in prep.*) will deal with coprophagous Diptera larvae together with most other insect groups associated with dung (to family level only).

In Dung and Around

S. stercoraria is to be found breeding exclusively in cow dung. The related *S. furcata,* however, is limited to sheep droppings on higher ground and to cesspits and *S. lutaria* to woodland dung deposits. But these and other *Scathophaga* species all occupy the same niches in the dung community despite the differing habits and the range in form of their pabulum. The life-cycle in *S. stercoraria* is completed in about 6-7 weeks as summarised below. (See also Cotterell (1920).)

The Ovum

Fresh cowpats are preferred by gravid females for laying and up to 150 eggs are deposited individually just below the dung surface. When only old, ''crusted'', dung is available, eggs might only be half buried. They are not prevented from hatching although the young larvae usually have difficulty in penetrating the hardened crust of the pat. The egg is slightly curved, measures 2-3 mm in length and is creamy-white in colour, becoming darker as incubation progresses.

Two wing-like extensions serve as supportive structures for the ovum in the fresh liquid dung, as do tiny setae (bristles) on the egg's undersurfaces.

The eggs hatch after 20-48 hours, the young larvae crawl out onto the surface of the dung and then seek a convenient crack by which to gain access to the softer part of the deposit below the crust.

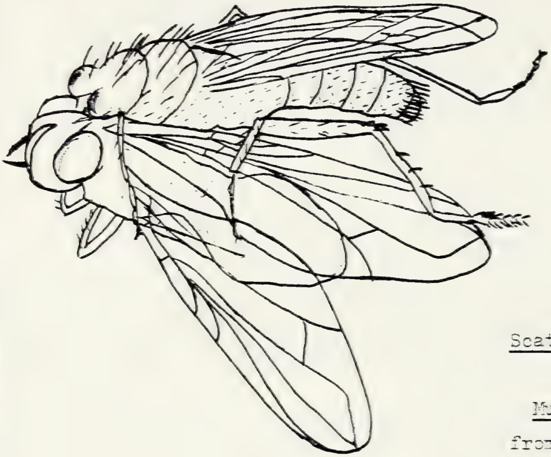
The larva

Throughout its larval development, *stercoraria* remains defenceless and coprophagous, unlike Muscid larvae which might be semi- or completely predatory. It is not certain whether, as a ''dung feeder'', the larva feeds on decaying vegetation in the excrement or on bacteria which are present living on the decaying materials. There are three larval instars (following the trends in higher Diptera to decrease the number of instars): In the first lasting 36 hours, the larva measures 2-3 mm in length and is segmented and cylindrical, tapering to a point at the anterior end. An anal plate is present at the truncated posterior end and delicate spines extend posteriorly from the fifth segment.

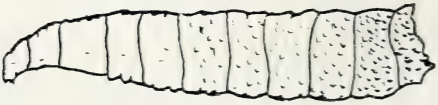
The larva of the second instar, 4-6 mm and 36-60 hours in duration, is similar in overall structure except for its mouthparts; as is the third instar, up to 15 mm long. When fully grown, seven days into the third instar, the larva is dirty cream-yellow in colour, with numerous microscopical spines.

The Puparium

Pupation mormally occurs in the soil below the dung deposit. The two anterior larval segments are withdrawn, bringing the anterior spiracles

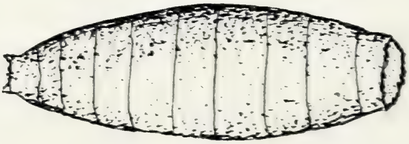


Scathophaga stercoraria
attacking
Musca domestica (below)
from Cotterell (1920).



3rd Instar Larva, 15mm

Ovum, 3mm [from Cotterell (1920)]



Puparium, 12mm length

forward, and the larval skin slowly changes to a brick red colour. This gradually changes to black and after 10-14 days emergence of the adult fly occurs.

The Adult

The sturdy orange males (9-12 mm) and less robust orange-green females (7-9 mm) are both predaceous, mainly on other Diptera. Prey is usually caught at the moment of its settling on dung, or sometimes flowerheads, and so as well as being a food source for *stercoraria* larvae, the cowpat is utilised as a bait in the adult's hunting activities. A great deal of work on predatory technique in the Dung-flies has been carried out. After firmly grasping the prey between its bristled legs, *stercoraria*'s highly modified horny proboscis is pressed against the neck of the victim and a puncture made through both sides. This cuts the nerve-cord, causing partial paralysis. The contents of the thorax, then the head (including eye pigment) and finally the abdomen are sucked out. More than 100 species have been recorded as prey including Diptera as large as the Tipulids (Crane-flies) and as powerful as the Syrphids (Hover-flies) along with small numbers of Hymenopterans and Hemipterans.

Sexual maturity in *stercoraria* is not reached until about 21 days after emergence from the puparium and, during this period, females are liable to be attacked by the stronger males. Mating takes place readily on or around cow dung and here the dung carries out a third function for the species — it is a means of assembling males and females for courtship purposes. *S. stercoraria* normally overwinters in the adult stage.

A Biological Control?

Cotterell suggested that the Common Yellow Dung-fly could be used as a means of natural control of those notorious sheep pests, Blow-flies (*Calliphora* spp.) whose larvae feed in the skin and tissues of grazing livestock. This causes the infection "strike" which leads to the sheep's lowered wellbeing and even to death. The idea has not really been furthered in the 60 years that have followed his paper, but it is possible to briefly assess the merit of his suggestions now as currently perceived:

Yellow Dung-flies are natural predators of Blow-flies and must have some effect on the wild populations of the latter at local levels. However, the Dung-flies seem likely not to succeed as a Blow-fly check because

(1) The species is not a specific predator on Blow-flies, so high *stercoraria* populations would also reduce numbers of harmless fly species, "side effects" unknown.

(2) An increased *stercoraria* population would give an increased food supply to certain predatory Dipteran larvae. And so, many unwelcome species would continue to thrive, including *Morellia* which transmits Summer Mastitis to cattle.

(3) *Stercoraria* breeds only in cow dung, so none would exist in moorland areas where only sheep are reared.

(4) ''Biological controls'' are most effective when the controllant is not a native species — and the Common Yellow Dung-fly is already widespread at least in the Palearctic and Nearctic regions.

Perhaps *stercoraria* would never have been used anyway because of the advent of the alternative chemical pesticides unforeseen by Cotterell. These cheap and effective controls, like DDT, BHC, Dieldrin (withdrawn 1965) and organophosphorus compounds, will soon be replaced by even More powerful controlling agents (Elliott *et. al.* (1978), Diversey Ltd. (1982)).

Some Conclusions

The Common Yellow Dung-fly is one of a huge number of insects worldwide which are or might be of great economic significance. Sufficient work has been completed on only a tiny proportion of these species and amateur as well as professional entomologists have an important role to play in the future study of insects both troublesome and beneficial to man. It is hoped that this article might perhaps stir an interest and encourage enquiry in these important fields.

Acknowledgements

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Duncan Reavey (6934)

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FROM MOTHS TO BUTTERFLIES

I have been breeding tropical moths for many years and have had my fair share of success. The one good thing is that not too much space is required for pairings and the larvae appear to do alright almost anywhere from outdoor sleeving to properly adapted larval cannisters. My only claim to fame in the butterfly world has been many pairings of the English Swallowtail (see *AES Bulletin* for May 1974), as well as the European Swallowtail; but in the early summer of 1982 this was all about to change.

I attended the annual meeting of the Exotic Entomology Group, which was held at the London Butterfly house, Syon Park; and after a guided tour, realised that breeding tropical butterflies was indeed a possibility. To observe pairings and courtship before one's eyes were breathtaking, and then to watch egg laying and the resulting larvae roaming freely over the foliage was like being in a dream. I had the opportunity to purchase ova and potted foodplant and did so, obtaining two *Skimmia japonica*, a handy shrub, two *Choisya ternata* (Mexican Orange) and one Rue (a herb).

The unidentified ova were placed into a small plastic container and within a couple of days began to hatch; as they hatched they were allowed to roam a potted *Skimmia* plant (sleeved), choosing the young soft leaves to eat first. The young larvae seemed happy in their new home (although my wife was a little disturbed with the sight of a sleeved plant on the sideboard). Most appeared content until the third instar when they began dying off, and I wondered whether the atmosphere was too dry, and the light too low. It was then that I decided to purchase a greenhouse and hopefulle create a miniature Butterfly House.

The 8 ft x 6 ft greenhouse was erected at my parents' house (my garden not being large enough) and was placed on a three course layer of brick adding height to the sides. My next problem was how to shade many of the plants from direct sunlight, preventing scorching during sunny days but allowing maximum light coverage during dull days. The netting also helps prevent great heat loss during colder weather. The netting was fixed in place by stapling to wooden strips placed in the greenhouse uprights, the same procedure being applied to the roof section.

By early July, the greenhouse was ready for planting, and so I purchased *Skimmia japonica*, *Citrus* (lemon), *Citrus* (orange), *Choisya ternata*, and *Passiflora*. For nectar giving plants, I obtained cuttings of *Lantana camara*, a shrub whose flowers are rich in nectar and which is used by the Butterfly House, and placed these in water. After a couple of weeks tiny shoots could be seen sprouting from the main cutting and before long these were happily installed in the greenhouse.

All this was only just complete when the first two butterflies emerged. They were both male *Papilio demetrius*, but I decided that releasing them into the greenhouse would give me a feeling of things to come. Both seemed to enjoy their surroundings and it was a delight to watch them soar down to feed on the *Lantana* before resuming their flight about the greenhouse. I was amazed that they actually remained unscathed for so long and both lived for eight weeks. In order to keep the humidity as high as possible, I purchased a hand held spray, and had this sprayed into the area three or four times a day.

The remaining larvae that had resulted from my ova were given the freedom to roam the foodplants, and those that successfully formed up and emerged, were *Papilio demodocus, Papilio anchisiades* and *Papilio polytes*. A few ova of *Heliconius charitonius* had also been purchased and of the three that formed up, only one (a female) emerged. After a week she began to lay her orange ova on the young shoots of *Passiflora*. They were, of course, infertile but this gave me the confidence that the right conditions prevail.

At the AES exhibition in October 1982 I purchased two *Aristolochia* plants (a tropical climber, the foodplant of many *Papilio* species including the birdwings) and also six European Swallowtail pupae. The plants were placed into the greenhouse, and here I made my biggest mistake.

Having no artificial heating during the winter months (not that the cold spells were harsh) I lost both the *Aristolochia* plants and the *Lantana camara*; the *Passiflora* also took a turn for the worse, but I am glad to say recovered early spring.

By April 1983 I had introduced Fennel into the greenhouse and Sweet Rocket and Valerian would be providing the early summer nectar. The *Papilio machaon gorganus* all emerged and pairings took place within a few days of emergence. After pairing, the weather took a turn for the worse and the Swallowtails laid only a few ova on the fennel. I was just about to think it was a waste of time, when the sun emerged one afternoon, and the females smothered the fennel with ova. A few of the ova were laid on both the *Skimmia japonica* and the Rue.

My next encounter was with the Gulf fritillary (*Agraulis vanillae*). I had obtained ten pupae, and been spraying them daily. The first one to emerge was a perfect male, but from then on each one that did emerge was crippled; it was not until too late did I realise that lack of humidity was the cause. With this lack of humidity came a new threat, red spider mite (*Tetranychus urticae*), a small mite, which slowly saps the foliage of its colour, the leaves turning yellow, then white, before dropping off. I had, in fact, noticed this, first on a *Choisya* leaf the previous year, but thought it was the plant 'settling in'. These tiny mites hibernate in the cracks of the greenhouse frame until the warmer weather and then resume feeding. What was I to do? I certainly could not spray the plants. It was then that I was informed of the Natural Pest Control at Bognor who specialise in predators for these destructive pests, and I am glad to say could supply me with the answer.

My *Papilio polytes* emerged one at a time and so I was unable to obtain pairings. At the beginning of July I purchased *P. bianor* and *demetrius* pupae from Entomological Livestock Supplies and before long both species were emerging. Pairings were sighted and before long ova were being laid all over some newly purchased *Choisya* plants. At the time of writing my second generation of *bianor* are beginning to emerge, and I have had a pairing of *P. helenus* from pupae that were sent to me. Another species that I was successful in rearing was *Dione juno*, but no pairings were obtained.

Recently I have purchased some more *Lantana* but unfortunately have introduced Whitefly to the greenhouse, so once again a predator will be required, this time a small wasp.

Having now moved house, I am at present setting up a larger greenhouse and hope to include many more foodplants such as *Aristolochia*, Banana, Oleander, Sallow and Willow. My humidity will be controlled by an overhead watering system and winter warmth will be provided by a heater.

I am hoping to gather as much information as possible on the foodplants and life cycles of tropical butterflies and would be pleased to hear from anyone who has bred Papilios and other species with the relevant information.

J. Green (4932)

UNUSUAL FOODPLANT FOR PAINTED LADY

For the first time last year I bred about 50 Painted Ladies (*Cynthia cardui* L.) which I allowed to fly freely in a greenhouse containing many food and nectar plants. The butterflies paired and laid not only on some nettle plants but also, rather to my surprise, on a large Ribwort plantain (*Plantago lanceolata*). I left these and they duly hatched, the larvae fed on the plantain and developed into healthy butterflies.

Although I have consulted many butterfly books I cannot find a mention of this foodplant.

Stephen Hall (J)

A THOUGHT ON PINS

I work in a museum and I often see insect specimens, mainly Lepidoptera, falling apart due to the kind of pin on which they are mounted. The cause of this is the use of brass pins. There is a reaction of the insect's body tissues with the copper component of the brass and verdigris, a green material, forms and eventually pushes the body apart. This occurs with both plated (white) and black japanned pins, sometimes after only a few months. I often think of the time which someone must have spent collecting and preparing these specimens, time which has gone to waste.

To avoid this problem I suggest that steel pins are used but with ordinary steel there is the chance of rust forming, although we have some specimens over 100 years old on tempered pins which are still in good condition.

There are three kinds of stainless steel pins now available:

> Headed pins, continental length, in three different diameters. Nylon-headed pins, continental length, in nine different diameters. Headless pins of various lengths and diameters.

The continental types may be too long for the depth of some store boxes or cabinet drawers and those thinner than No. 3 tend to be very 'twangy'. My personal preference is for the headless pins as they have very fine points which makes the pinning of an insect much easier.

D. H. Hall-Smith

RED ADMIRAL NO HIBERNATOR

Red Admiral *Vanessa atalanta* L. in early March. - The article by Barry Ofield in the *AES Bulletin* Vol 42 on page 123 is most interesting and the sighting date more so as it was as early as March 5th 1983. As Mr. Ofield mentions the word 'hibernation' and asks for other records I am prompted to make this reply as I feel that ambiguity has occurred.

Now the Red Admiral is a very powerful butterfly, but does not reckon to hibernate in Great Britain except in the South West. Here I have one record from Cullompton, but even here I would like more detailed substantiation. At the beginning of November, or with the advent of the first frosts, the Red Admirals instantly leave the ivy blossoms on which they have congregated for feeding in the end of their stay in Great Britain. Their absence is most noticeable and the reason for this is that they have started their journey across Europe to the country of origin of their parents by the same route as the latter made their way to Great Britain in the Spring. The butterfly flies by night so is able to reach a warmer climate very quickly, where nectar is available. It is a butterfly with an enormous appetite and will not hibernate, which means passing the winter in a torpid state. So I would respectfully suggest that here we may have the reason for the early March date of Mr Ofield's single butterfly which could be that someone had kept it alive by feeding it in the Winter, who lived in the neighourhood of Burghfield Common, which is 5-6 miles South of Reading, and then it escaped early in March.

Quite recently I saw an announcement in a well known Lepidoptera Society's Proceedings which stated that a member had exhibited at their monthly meeting in March 1982 at Liverpool two Red Admirals which he had *hibernated* at Chester through the previous Winter. From the wording of the Society's proceedings this would definitely have gone into the records of the Red Admiral hibernating in Great Britain if I had not been unimpressed. Therefore, I had the member concerned interrogated and in the course of this he stated that he had fed the butterflies on 'sugar and water soaked in cotton wool'. This was the only explanation possible and what I had hoped for, and confirms that the Chester record is not one of hibernation.

In view of what I have said I do feel that great care and enquiries be made before records of the Red Admiral hibernating are made public. The butterfly is such a beautiful and interesting species that I feel there is much more to be learned about its immigration in the Spring every year and back migration in the Autumn. Some thirty years ago, when at Harpenden, I undertook research in company with the late Dr C. B. Williams F.R.S. and we learned a lot about the habits of the Red Admiral and ubiquitious Painted Lady, But in trying to gain information we had to treat the insects separately so different are their habits as an imago.

In conclusion I would like to thank Mr. & Mrs. Ofield for their record.

Peter Crow (393)

AN APRIL NOTE FROM DEVON

On April 12 last, a bright and sunny day, I watched to my surprise a Humming-bird hawkmoth (*Macroglossum stellatarum* L.) visiting my bed of polyanthus and on going to the space between my garden shed and the old well, a crack of ¾ inches in places. I noticed that the Humming-bird hawkmoth I watched creep in there to hibernate last autumn had gone.

I have long suspected that this moth hibernates, or endeavours to do so, as it is quite common to see them searching for crevices in the autumn.

Now I have positive proof and I must record that we have just had the most mild winter I have known in South Devon. There has not been any snow only twice have I noticed a skim of ice on the water tank in the garden.

Incidentally the larvae of the Jersey Tiger (*Euplagia quadripunctaria* Poda) are now active on the Forget-me-not *(Myosotis)* leaves. It is still evident, however, that the moth population generally is steadily declining. My MV lamp is registering fewer every year and there were only five on the night of April 11/12. This was in ideal dull conditions and consisted of a couple of Clouded drabs with singles of Common quaker, Powdered quaker and Early grey.

D. Laidlaw (5267)

A BRIEF INTRODUCTION TO THE PHASMIDA

The order Phasmida comprises the Stick and Leaf Insects, and as stated by Kirby in 1896 they are a comparatively neglected group of insects. However, in recent years, many new species have been brought back from collecting trips abroad or imported to the U.K. These have been bred on such common foodplants as Bramble and Oaks, which is revealing some of their fascinating behaviour in captivity, although the insects may well act in a slightly different manner in their natural habitat.

Some 2500 species exist, including a small number of Leaf Insects, which, as their name implies, are remarkably well camouflaged as leaves, including appropriate vein markings on their wing-cases. Stick Insects are often very thin and twig-like, sometimes winged in one or both sexes. (It is well known that some species are parthenogenetic, that is eggs reproduce without fertilisation, usually producing females only e.g. *Carausius morosus* from India, commonly bred in schools. In such species males may be rare, or even unknown.) Some genera are very unusual, consisting of plump species heavily armed with spines . . . some of these have a range of defence mechanisms, and are very aggressive when handled such as *Eurycantha* species from Papua New Guinea, and *Heteropteryx dilatata* from Malaysia. Often, green or brown ground colours are usual, but some have very colourful wings, sometimes used in a startle display *ie. Orxines macklottii* from Java, etc. which is a lichen mimic. Some species' coloration can be quite spectacular, and in others wings are used for flight. (Usually males only, as females are heavily laden with eggs - indeed, if females possess wings they are smaller than the males.) Usually this is a downward gliding flight, but I have heard of *Prisopus berosus* males flying around lights in Mexico, in moth fashion.

As one of the 'minority' families, it is difficult to readily obtain dead-stock, as many collectors overlook them.

Several small species occur in Europe, sometimes quite commonly. I located a *Bacillus* species, believed to be *atticus* near Porec, Istria, Yugoslavia in June 1983 on Evergreen Oaks and bramble. Two species occur commonly in France, mainly in the South, and most European countries possess at least one species, although there is a lack of detailed information on their localities, and the taxonomy is complex, so past records may be suspect.

European species are just as easy to rear in captivity as giants such as *Pharnacia* from Malasia, which often reach 15″ - 20″ overall in length (around 10″ - 13″ from head to tip of abdomen) although large cages are needed! Indeed, Phasmids are most plentiful in the tropics, with a particularly interesting range of species (size, shape and beauty) occurring in Malasia, Borneo, Java, Australia, Papua New Guinea and nearby Islands, and South America. A few African species like the genus *Palophus* are almost as large as *Pharnacia*. Identification is not straightforward, even with such giants, as several species are very similar in appearance.

Very little is recorded on their behaviour in the wild, distribution and foodplants. Numerous descriptions of eggs are still required which can help distinguish closely related species.

All are vegetarian, feeding on grasses, plants, shrubs and trees, rarely causing any significant damage although some populations can reach pest proportions, but numbers seem to vary each year. Better known examples of 'pests' are *Graffea* species in South Sea Islands, on cocoanut trees, and *Diapheromera femorata* the American Walkingstick, found in many parts of the U.S.A. and Canada. I have a small stock of these on Oak at present, but they will accept many different plants.

The major publications on Phasmids are Westwoods quarto catalogue of Phasmidae, published by the British Museum of Natural History in 1859, containing 40 uncoloured plates, and Brunner von Wattenwyl and Redtenbacher's "Die Insektenfamilie der Phasmiden", Leipzig 1906-08, also with a fine series of uncoloured plates. Since then various papers and revisions of a particular genus have occurred, but much information is still unrecorded. Keys to species level occur in Brunner, but a more recent key, useful in identification to at least family level is that of Bradley and Galil. Bedford gives a useful summary of many important papers, covering such subjects as oviposition and biological development, behaviour and enemies.

Clark's book, now out of print, is a useful introduction, now very much out of date, but it does cover easily obtainable species in culture, and is in fact the only recent book exclusively covering the Phasmidae. Newsletters of "The Phasmid Study Group", formed in 1981 cover new species in culture in some detail. If any members studying these insects would like further information, please contact me. The AES published a leaflet on Phasmids (Anon, 1970) which was recently revised, containing useful information, particularly on *Carausius morosus*.

The above is just a brief outline, and it is clear that much information is still required. There are undoubledly many species as yet unidentified occurring in the tropics.

Paul D. Brock (4792)

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SOME SCOTTISH BUTTERFLIES

On a collecting trip to Scotland in the first week in August, 1983 we found *Erebia aethiops* commonly in the Speymouth Forest in Morayshire. Also seen were *P. aegeria, C. pamphilus, P. icarus, P. napi, L. phlaeas* and *M. jurtina*. On cliffs by the coast nearby, we found *H. semele*. I was accompanied by S. Mason (5644). *E. aethiops* flew only in sunshine, the males patrolling slowly over the grassland.

Dominic Rey (7920J)

AN EARLY PEACOCK

On Sunday the 29th of January 1984 a friend brought me a live specimen of the Peacock butterfly (*Inachis io*). It had been caught in a health foodstore in Edinburgh earlier that day and was in good condition. It had obviously just emerged from hibernation due to the sudden mild spell.

J. F. Anderson (7580J)

REARING THE GEOMETRID *CHLOROCHLAMYS CHLOROLEUCARIA*

ORIGIN

Common and widely distributed throughout much of U.S.A. and Canada.

OVA

Scattered. In captivity often on the sides of the rearing container rather than on foliage provided. Pale yellowish when first laid, very soon changing to deep orangey-red if fertile, and finally turning black before hatching.

LARVA

Short, and blackish-coloured when newly hatched. In the wild state it would appear that many kinds of botanically unrelated plants are acceptable as food, but in captivity good rearing results were obtained with cultivated Rose leaves as the only pabulum.

After the first moult the larval colour becomes browner, and by the time the final instar has been reached, the larva is rather an odd-looking creature, very cryptically coloured and shaped to resemble the shrivelled brown edge of a serrated leaf. The overall general coloration is light yellowish to purplish brown, except for the anterior abdominal segments and the tail which in some individuals are very much darker. A row of large fleshy projections along each side of the abdomen help to break up the outline and enhance the resemblance to the serrations of a withered leaf. The pair of forward-pointing projections on the front of the first segment, immediately behind the head, which characterise the whole of the sub-family Geometrinae, are rather small in this species, but they are matched by small lateral projections along the sides of the thorax.

The dorsal line is usually inconspicuous, but is often broadened into a fairly large, dark triangular spot on some of the abdominal segments. The spiracles are white, ringed finely with dark reddish brown, and on the abdomen they seem to be located on the upperside of the large lateral projections.

PUPA

Rather variable in colour, ranging from light brownish grey to yellowish grey or yellowish brown. The dorsal line is usually blackish, and there are sometimes other blackish markings on the sides. The cocoon is of the open network type, of reinforced silk, amongst spun-together foliage.

IMAGO

Beautiful delicate light green, with two narrow white cross-lines on each wing, and very fine pink and white chequered fringe lines. The body is

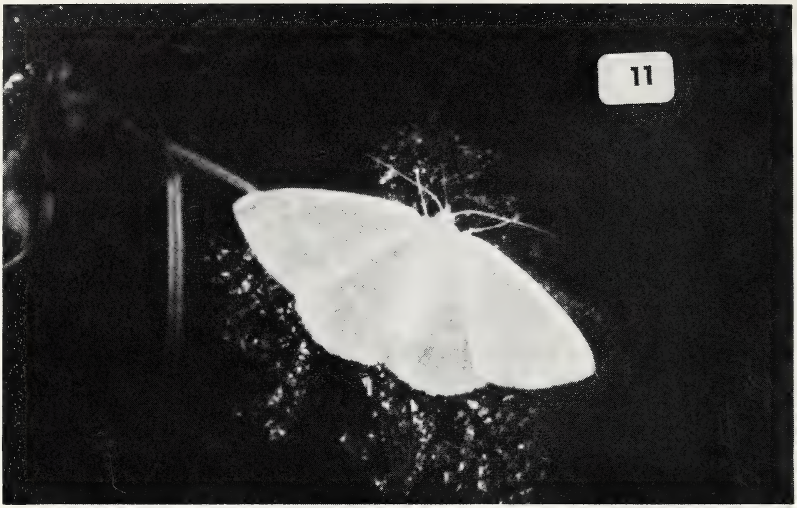

Fig. 11. Adult of *Chlorochlamys chloroleucaria*.

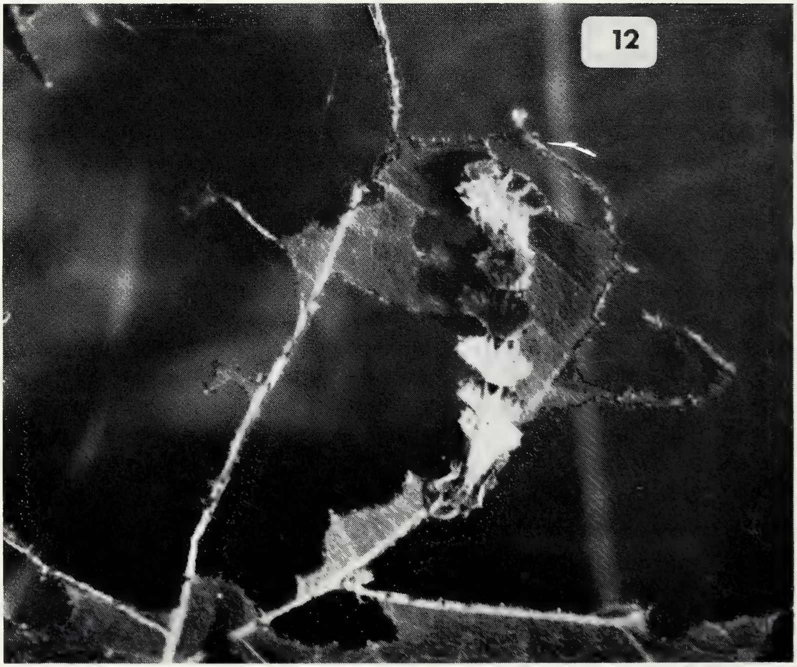

Fig. 12. Larva of *Chlorochlamys chloroleucaria*. Both photographs by Bill Lichti.

white except for the thorax and a band on the abdomen which are light green. The female has a wing-span of about one inch, and the male usually a bit less.

This species overwinters in the pupal stage, but in captivity it is erratic in the number of generations per year, as some pupae will produce moths less than a month after the larva pupates, whilst others, even from the same brood, may remain dormant for up to nine months.*

ACKNOWLEDGEMENT

Many thanks are due to Bill Lichti, both for supplying livestock and for the photographs of this interesting little species, and for going to some lengths to have the species properly identified.

J. L. Gregory (4116)

* (Editorial note: This probably means a facultative diapause controlled by the daylength and perhaps biased also by rearing at higher temperatures than normally experienced in the wild.)

WINTER PROJECT 1982/1983 THE PAINTED LADY

Every autumn I like to choose a continuously brooded butterfly to take through the winter, partly to relieve the boredom of the long dark nights, and partly as a challenge to provide a totally controlled micro-climate matched to the needs of a particular species.

The choice obviously has to be restricted to a species readily available in sufficient numbers in September. I consider 12 pupae to be the minimum viable number for a successful breeding, so in September 1982 I decided, with some trepidation, to tackle the Painted Lady (*Cynthia cardui* L.), a species that I had had only very limited success with previously and which is regarded by many as a difficult candidate.

I already possessed seven pupae, the sole progeny of three wild caught females in August, so I cast about in the local bugs community for a few more pupae to make my minimum viable number, but without any success, so it was to be a parent stock of seven if they all emerged.

The pupae were all duly hung up in a breeding cage in my greenhouse and in the third week of September they all emerged within three days, to produce three females and four males.

I had decided that although it was only September, they would be fed and encouraged to lay on their projected winter diet, a 5% fructose solution, and nettles as the larval food plant. Nettles, I knew from previous experience, can be found by the diligent gardener even during periods of severe frost in January, if one looks on south facing banks or on the south side of woods or farm buildings.

The imagoes were placed in a cardboard box approximately 12″ x 10″ and 10″ deep with a piece of nylon netting as a cover. The box was then placed in my dining room with an angle-poise lamp containing a 100 watt bulb some 9″ from the netting top. My dining room receives only background heat, about 60°F in daytime and falling to 45°—48°F at night, so the lamp provides the necessary heat as well as light, which is also where cardboard boxes come into their own, as opposed to plastic tubs, the cardboard has a much higher insulation value, retaining more heat for the butterflies.

Also in the box went a small red plastic egg cup, stuffed with blue toilet tissue soaked in Fructose solution and a 1½″ flowerpot containing a sprig of stinging nettle in damp soil.

They were given ten hours light per day and were very active for this period each day, very quickly learning to feed from the egg cup, but it was not until the eleventh day that the first pairing was observed; two Painted Ladies sitting quietly in the corner of the box. The remaining females paired together two days later.

The first eggs were laid three days later, a few on the nettles (changed every morning) but most on the netting lid, a phenomenon I had not noticed in this butterfly before. Egg laying continued at a pace for another 35 days, the males dying after about 30 days. The females were far more prolific than I had ever imagined, each one laying in excess of 500 eggs, which, although achieved under ideal conditions unlikely to be repeated in the wild, gives a clue to the species' rapid multiplication on its annual northward migration. Another interesting discovery was that my usual twice daily spraying of tepid water suppressed activity and egg laying. It appears that the hotter and drier it is the better the Painted Lady thrives.

At room temperature the ova hatched after only six days and fed up on nettles in 23 - 15 days.

Three more broods were raised during the winter in my dining room before the progeny were released into the wild in the middle of May.

R.Burgess (7257)

CAMBERWELL BEAUTY IN SHETLAND — 1982

If you were a Camberwell Beauty, Shetland may well be the last place you would hope to find yourself. The adult butterfly in late Summer and Autumn would wish to feed on sap from willow, birch or oak and on any fallen fruit; in Shetland there are very few trees and certainly no fallen fruit. This species is particularly adapted in having tarsi sensitive to the chemicals found in fruit juices. In the unlikely event that an adult female survives the winter and mates, the chance of her finding a suitable site for egg-laying (willow, birch, elm or poplar leaves) would be virtually zero.

Nevertheless, Camberwell Beauties do occasionally find their way to Shetland and are sighted every few years. Shetland has very few native butterflies and so any strange appearances are likely to be noted. The Large and Small whites have of course found their way north with the veg. Small tortoiseshells and Large heaths can be found in the south of mainland Shetland and there are annual visits of Red Admirals and Painted Ladies. In this context surprise visits of Monarchs or Camberwell Beauties are conspicuous.

On 4th August 1982, Mrs Mary Stevenson of Lerwick in Shetland found a Camberwell Beauty in her garden and kept it captive for a few days before releasing it. It was the first one reported there for three years. Some entomologists have suggested that the only way that these butterflies reach the British Isles is by hitching rides on timber-boats from Scandinavia. This is certainly plausible, because of their liking of tree sap. The isolation of Shetland made it relatively easy for me to test the likelihood of this butterfly having used this method. No boat had brought timber to Shetland since early June and this boat could not have been responsible, for two reasons. Firstly, it is unlikely to have been in a town unreported for two months and secondly, emergence of adults would be a rare event before July. I am certain that this specimen found its way from Scandinavia by the power of its own wings, and incidentally with little help from the wind that was unusually gentle for two weeks before the sighting. This is a flight of over 300 km.

The border of this specimen was yellow rather than white. The old English names of "White Petticoat" and "White Bordered" were mainly given to specimens after hibernation, when the yellow colouration had faded. Other names are "Mourning Cloak" (USA) which is a translation of "Trauermantel" (Germany) or "Sorgmantel" (Sweden); also "Le Morio" (France), "Antiopa" (Spain) and "Willow Beauty" or "Grand Surprise" (UK). Also *Nymphalis antiopa*, of course.

Martin J. M. Smith (5794)

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B UTTERFLIES IN NORTHERN YUGOSLAVIA — POSTSCRIPT

I sent a list of the butterflies I and my friends saw in northern Yugoslavia between 1980-83 to the Yugoslavian Entomological Society in Zagreb. The eminent lepidopterist, Dr Z. Lorkovic, has written to me with the following comments about difficult species and their distribution in the region.

A. mannii is a coastal species only rarely found inland.

G. cleopatra is also a coastal species, not found inland.

L. duponcheli is not found north of Macedonia, nor is *P. pylaon.*

E. eumedon is unlikely in western Croatia, as is *A. artaxerxes.*

P. egea is doubtful from *Jacje.*

E. styx is only known in Yugoslavia from the Trenta Valley and not at lower altitudes.

Of the skippers, apparently *P. armoricanus* is much more common than two similar species which I saw. *P. alveus* and *P. onopordi.*These can be identified with certainty only by examination of genitalia. The same applies to *G. nostrodamus*, which can be confused with the commoner *G. pumilio.*

In view of Dr Lorkovic's local experience and knowledge of these species, I am now treating the records of the above species away from their known haunts as doubtful, and my article on ''Butterflies in Northern Yugoslavia" *(AES Bulletin Nos. 342,343)* should be read with Dr Lorkovic's comments in mind.

I hope to have a chance to check out some of these sightings when I visit Yugoslavia in June/July 1984.

David Withrington (7110)

TO FLASH OR NOT TO FLASH

During the summer of 1983, Mr John McFarland, a Fellow of the Royal College of Surgeons, was photographing butterflies in the London Butterfly House at Syon Park, Isleworth, using a flash gun. The question was raised by Mr Clive Farrell, the owner of the butterfly house, as to whether the flash could injure the eyes of butterflies, causing temporary or permanent damage to the sight. Mr McFarland took the matter up with a colleague at the Institute of Ophthalmology at Moorfields Eye Hospital and further opinions were obtained from R. Vane-Wright of The British Museum (N.H.) and Professor Wehner of the University of Zurich. The consensus of opinion of all these authorities was that the nature and duration of the flash produced by a photographic flash gun was unlikely to cause even temporary loss of sight and at the most there might be short term effect to a single photoreceptor in the insect's eye, being that receptor looking directly at the flash. So the message is, flash on — you are not harming the butterfies.

P. W. Cribb (2270)

A WHITE CHRISTMAS

This last Christmas of 1983 must have been one of the mildest for many years, and it provided me with what I consider to be an unusual sight.

I was in the garden mid-morning on Christmas Day, enjoying the sunshine when a butterfly 'floated' into view. At first I thought that perhaps it was a very pale Brimstone, but when it got close I saw that it was a female Large white *Pieris brassicae* L. It paused for a few moments, hovering over a broccoli plant before flying up and over the fence and out of view.

I do not recollect ever seeing a butterfly on the wing in this country before on Christmas Day, certainly not a Large white. I wonder if any other AES members have seen any butterflies this last Christmas time?

Arthur Cleverly (7265)

A COMMA RECORD AFTER SIXTY YEARS

On August 14th 1983 on a sunny afternoon, I visited Barleston Rough Close Common, Staffs. Quite late in the afternoon I saw a butterfly fly into a small Oak tree. I followed it and saw it was a Comma (*Polygonia c-album* L.) ready to roost for the night. It was very hard to see because it settled next to some dead Oak leaves and closed its wings, but suddenly the sun's rays shone through the tree and the Comma started to open and close its wings as the sun shone on it and I netted it.

I told the county lepidoptera recorder about this, and he said it was 60 years since the last Comma had been recorded there back in 1923 by B. Bryan. No doubt this one is therefore of historical interest, following on after 60 years. Mr R. G. Warren has it now, also one I took in my garden on August 10th 1983 on a privet flower. Also on August 14th 1983 I recorded three Common blues (*Polyommatus icarus* L.) at Rough Close Common, the first I have seen in all my years of recording there.

The second brood of the Common blue in Staffordshire this year was quite large and this may be the reason for its turning up, as its food plant, Birds-foot trefoil, is very plentiful there. It will be interesting to see next year if the Common blue has spread into the area. The Small skipper (*Thymelicus sylvestris* L.) was also in quite large numbers in the area, and in other parts of Staffordshire too.

Jan Koryszko (6089)

LEPIDOPTERA FROM THE NORTH IN 1983

Last year I was able to make a number of observations on the lepidoptera mainly in the Teesside area, but also further north, from my home in Stockton-on-Tees, as a base. These were as follows:

Late April	Basselton Woods	Small Tortoiseshells (10-15)
Early May	Basselton Woods	Wall Browns (5-10)
27-29 May	Jedbrough	Orange Tips
		Large Whites
		Small Whites
30 May	Along the A19	Garden Tiger Moth (larvae)
15 June	Basselton Woods	Drinker Moth (larvae)
3 July	Norton, Cleveland	Buff Ermine moth
21 July	Basselton Woods	5-spot Burnets (10-15)
22 July	Basselton Woods	Meadow Browns
		Ringlets
		Large Whites
		Small Whites
23 July	Basselton Woods	Large Skippers (2-3)
24 July	In my garden	Gothic moth
25 July	Basselton Woods	Large Whites (50-60)
1 August	Basselton Woods	Chimney Sweep (10-12)
2-5 August	Blackpool	Grayling
		Marbled White
		Pale Clouded Yellow *(helice?)*
		Brimstone
12 August	North Lane, Cleveland	Common Blue (30-40)
		5-spot Burnet
19 August	Basselton Woods	Large Yellow underwing
	In my garden	Peacocks
21 August	Strathyre, Calander	Fox moth (larvae)
27 August	Haynes Arms, A19	Antler moths
28 August	Loch Leven	Poplar Hawk
30 August	In my garden	Small Coppers (2)
	Washington	Wall butterflies (18-19)
		Large Yellow underwing
		Dark Arches
31 August	Basselton Woods	Oak Eggar (larvae)

Unfortunately there were no Red Admirals, Painted Ladies or White Letter Hairstreaks to be seen in Basselton Woods. Some three years ago I recorded between 15-20 species of this latter butterfly which used to breed there before some construction work started in the woods.

Gordon Mackenzie (7651J)

SUSSEX PAINTED LADY

On the 6th September 1983 a single *Cynthia cardui* was flying in front of a bungalow at Pagham, Sussex and feeding on Valerian.

The butterfly remained in the vicinity for over an hour and made no attempt to migrate. A. J. Baldwin (5954)

MORE FALKLAND STAMPS

Our member William Block (4778) has drawn to our attention that due for release in January was a set of 15 Falkland Island stamps depicting insects, valued from 1p to £3. Due to the recent troubles there has been some difficulty in both getting stamps printed and in supplying the greatly increased orders for them as a result of the recent interest in the Islands. We hope to feature these in a later Bulletin when the stamps are to hand. — Editor.

SUDANESE BUTTERFLIES — A POSTSCRIPT

I am grateful to Mr Sevastopulo for his interesting comments (1982 *Bull. Amat. Ent. Soc.*; 41: 181-186) and for drawing my attention to an identification error.

The species recorded as *Colotis evarne* (Talbot) should have read *Colotis daira stygia* (Feld).

I have noted his comments about the food plants of *A. encedon* and *D. chrysippus*. It is quite conceivable that they feed on *Commelinaceae* and *Calotropis* but these plants weren't at all obvious to me on the site; possibly a Botanical enthusiast will discover them in time.

While it is true that mimetic associations are regarded as being evolved over a long period of time, the association of *D. chrysippus* and *H. misippus* on this particular site was unusual in that both species are probably only occasional visitors to the undeveloped arid savannah country of the area but with the introduction of the irrigation channels they both increased their numbers considerably and I was able to witness a steady increase in their population densities to the point where they could be described as "common" by the seventh year of the project. Possibly predators (many bird species) accounting for the female *H. misippus* forms that didn't correspond to the prevailing *D. chrysippus* ones as they were migrating to the site during the earlier years and then, subsequently, the apparently mimetic associations followed the usual ratio from esetablished colonies such as at Kosti, some 25 miles away on the White Nile, once these species had established themselves as breeding colonies on the site.

Dr C. H. McCleery (5117)

DEATHSHEAD IN CLEVELAND

A female *Acherontia atropos* was brought to me on 20th September 1983, having been found on the side of a shed at Nunthorpe.

N. W. Harwood (825)

THE ANT. — INDUSTRY

These emmets, how little they are in our eyes!
We tread them to dust, and a troop of them dies,
    Without our regard or concern:
Yet as wise as we are, if sent to their school,
There's many a sluggard and many a fool
    Some lessons of wisdom might learn.

They don't wear their time out in sleeping or play,
But gather up corn in a sunshiny day,
    And for winter they lay up their stores;
They manage their work in such regular forms,
One would think they foresaw all the frosts and the storms,
    And so brought their food within doors.

But I have less sense than a poor creeping ant,
If I take not due care for the things I shall want,
    Nor provide against dangers in time;
When death and old age shall stare in my face,
What a wretch shall I be in the end of my days,
If I trifle away all their prime!

Now, now while my strength and my youth are in bloom,
Let me think what shall save me when sickness shall come,
    And pray that my sins be forgiven.
Let me read in good books, and believe, and obey,
That when death turns me out of this cottage of clay,
    I may dwell in a palace in heaven.

Dr WATT

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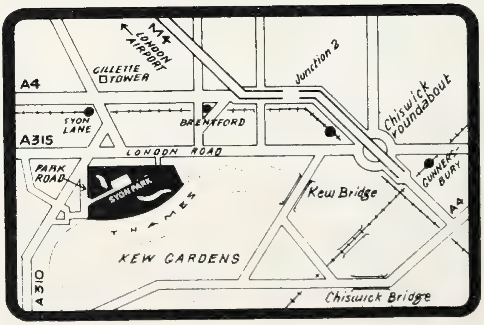

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BULLETIN
No. 345

EDITORIAL

With this issue the Society completes the 49th year of its existence and next year will be celebrating its golden jubilee. Since our membership covers an International spread, in order to keep in touch and retain interest, the efforts of the Society have always been concentrated in its publications and it is in these that its greatest strength lies.

In order to mark our 50th year, therefore, it is intended to issue a special number of the Bulletin which will include some specially commissioned articles. These will be illustrated in both colour and halftone. It has also been decided to reprint the early issues from 1935 which, as the handful of pre-war members will remember, were reproduced by the use of the ''jelly-pad''. This editorial, at the other extreme, as is the whole of the present-day Bulletins, is reproduced electronically. Since our early membership consisted of but a handful of enthusiasts, the circulation of these early numbers was very small indeed and they are now of great rarity.

Over the half century membership has climbed steadily. It would be nice if, in our Jubilee year, this could be boosted to top the two thousand mark. This target could be achieved if just one in ten of our present membership were to recruit a friend or colleague to join. With no increase in subscription next year, and the extra publication, belonging to the Society will be very good value indeed.

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Council is pleased to announce that thanks to the efforts of member Duncan Reevey, Messrs Imperial Chemical Industries, through their Jealotts Hill Research Station, have agreed to sponsor a photographic competition for AES members. Prizes of books and equipment to a value of £50 per annum, together with a visit to Jealotts Hill will be offered. Further details will be announced next year.

The subject of the first competition is ''*Camouflage in insects.*''

SPOROPHORE COLONISATION BY MUSHROOM SCIARIDS *(LYCORIELLA AURIPILA)* AND ADAPTATIONS TO HOST DEVELOPMENT

Sciarid colonisation of the mushroom bed and sporophore

In studies on commercial mushroom crops over 50 years (summarised by Hussey & Gurney, 1968; Binns, 1975, 1980), various damage symptoms have been enumerated. Thus, infestation by the mushroom sciarid (*Lycoriella auripila*) begins in unspawned compost though this, in itself, is rarely deleterious. Populations in the peat-chalk "casing" are often high (Binns, 1980; Clift & Toffolon, 1981), causing serious losses of sporophore initials ("pinheads") and small, "button" mushrooms (Hussey & Gurney, 1968). Thirdly, and most conspicuously (Symes, 1921) the mushroom stipe and cap may sometimes be tunnelled (Thomas, 1942; Hussey, Read & Hesling, 1969; Sandhu & Brar, 1980) but this is, again, of little economic significance (Hussey & Gurney, 1968). All these modes of injury were incurred by material infested with *L. auripila* at the beginning of experiments by the latter authors.

The cultivation of mushrooms, however, offers unrivalled opportunities for the study of the adaptation of the sciarid to the developing host. The mushroom sporophore is not only harvested commercially but is a favoured item of collection by entomologists (see e.g. Kessel & Kessel, 1939; Edwards, 1925; Chandler, 1978), particularly by those interested in Mycetophilidae (e.g. Trifourkis, 1977), within which family the Sciaridae were formerly included. As with mycetophilids (Trifourkis, 1977; Chandler, 1978, and see summary of Binns, 1980), the customary laboratory rearing of small numbers of sciarid larvae uses detached sporophores on moist peat (Austin, 1934). Although larvae could be reared on sporophores of *Agaricus bisporus* and of *Pleurotus oestreatus* in this way, peat alone, while contributing to the sciarid diet (Binns, 1980) was insufficient (Binns, 1973; 1975). Breakdown of the sporophore clearly occurred. Thus, if sporophore tissue alone was placed in a rearing beaker, autolysis occurred with the release of liquid and no larvae could be reared to maturity in this way, although considerable development occurred before the larvae drowned. However, where larvae fed on fresh sporophores placed on peat, they did not feed on the products of autolysis as fresh sporophores collected many larvae, within a few minutes of exposure, indicating feeding. Instead of peat, alternative, non-organic substrates could be used as absorptive media. Thus, when sand, brick-earth subsoil, activated charcoal, perlite, vermiculite or paper-tissues were used, development of larvae still occurred (but was more variable than with peat and failures to produce adults were sometimes recorded (Binns, 1980). Buxton (1960) noted that "some species of *Bradysia* may easily be maintained for an indefinite number of generations in decomposing fungi: for instance a crop of them may emerge at monthly intervals, in summer, in a closed breeding jar".

Laying on the sporophore

In commerce, the extent of damage to the mushroom from eggs laid on it appears to be limited and no subsequent author has confirmed Symes' (1921) description of larvae hatching from eggs laid on the gills burrowing into the cap. Sciarid eggs are not normally reported from harvested mushrooms nor is tunnelling of the stipe of mature mushrooms such a marked or invariable occurrence at the Glasshouse Crops Research Institute (GCRI) as one would believe from early accounts (Kessel & Kessel, 1938). However, there are indications that the earlier observations on egg-distribution, with respect of mushrooms, were made using sporophores which had been allowed to remain, unharvested. Thomas (1942) noted that eggs were laid not only on the stems, caps or gills of mushrooms but also upon the manure and casing soil. However, generally speaking, the majority of eggs are laid on the casing soil (Austin, 1934).

That the mushroom cap is attractive for sciarid oviposition was proved by observations in a heavily sciarid-infested house at GCRI where large numbers of eggs were found only on the gills of mushroom "flats" which when allowed to mature, measured *circa* 5" diameter (Fig. 13). Oviposition was seen there and sixty females, of which large numbers were found on the gills, without males, were collected from them, all of which contained mature eggs. These flats would normally have been removed at an earlier stage and so this aspect of sciarid behaviour has been neglected. Autolysis and liquification of the infested sporophores proceeded rapidly (as in the laboratory) and no sign was found of newly-emerged larvae burrowing into the cap. Larvae were re-discovered after about a week, massed on the flaccid and unrecognizable remains of the mushrooms. What few sporophores developed during this massive infestation of sciarids, were not tunnelled via the stipe and the attention of the insects was not, apparently, renewed until the sporophores were well-opened and the eggs were laid on the gills.

Adaptation to host development

From observations on sporophores collected in the field, Trifourkis (1977) stated the Sciaridae were associated with earlier stages of sporophore decomposition than were some mycetophilids (cf. Chandler, 1978, for the succession of colonists of ageing sporophores). It appeared, however, that newly opened sporophores were not attractive to ovipositing flies. Kessel & Kessel (1939), found no sciarid larvae in fresh fungi and no females were seen ovipositing on mushrooms until they had been open for at least three days. Similarly, Symes (1921) considered that early picking of sporophores normally prevented the development of sciarid attack on the sporophore.

It has now been shown (this paper) that sciarid larvae can develop on unspawned compost, as summarised by Binns (1975), or on sporophores.

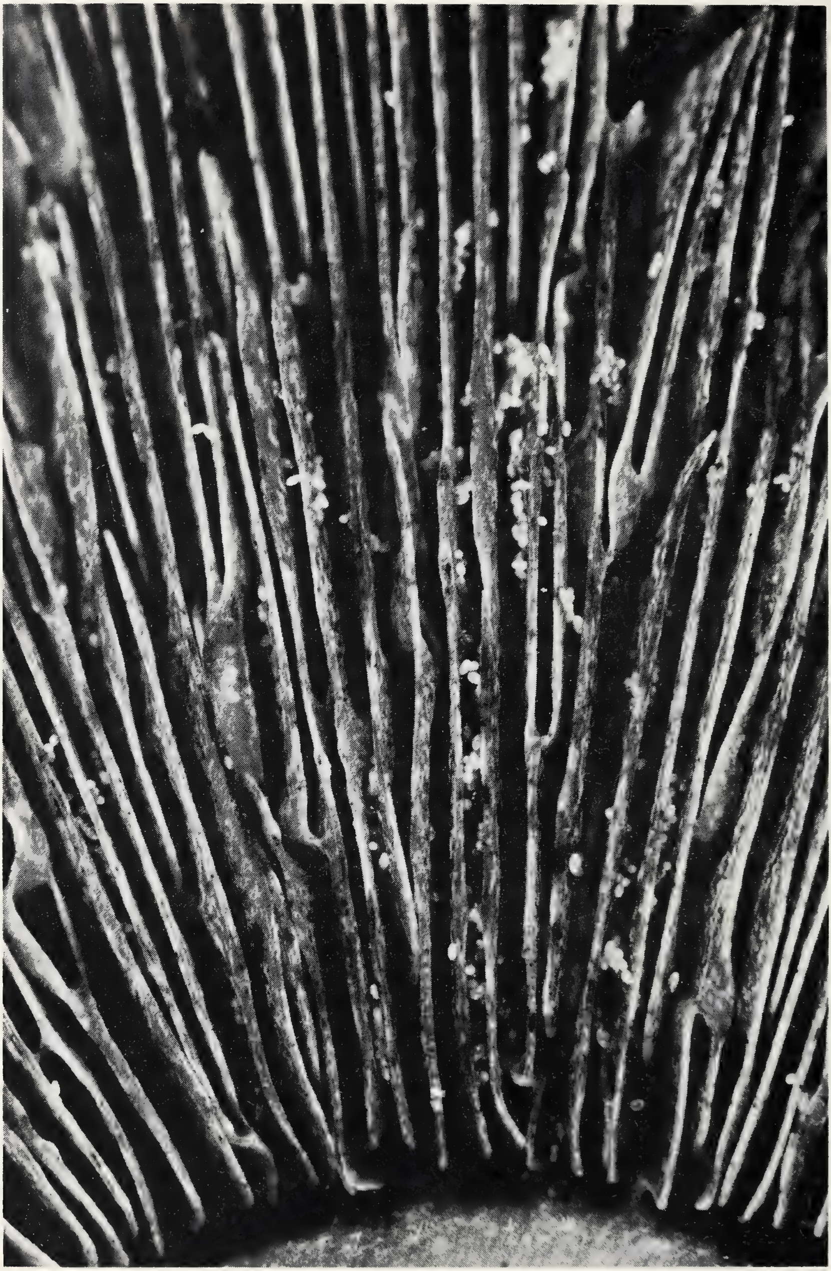

Fig. 13. Eggs of the sciarid *Lycoriella auripila* laid between the gills of flat mushrooms (*Agaricus bisporus*). Photo by GCRI.

Not surprisingly, they were also shown to exploit the *intermediate* stage of mycelial colonisation of the compost and the development of sciarid larvae was shown to be favoured by compost containing small amounts of "running" mycelium (Binns, 1975). It is also significant that sciarids (and mycetophilids) are able to complete their development on mushroom tissue alone on an inert substratum. However, so far from confining its activity to the sporophore, mushroom sciarid larvae exploit all phases of the development of its fungal host; from attacks on the uncolonised compost substrate (Hussey & Gurney, 1968) to the destruction of its sporophore (Binns, 1980). The sciarid is, therefore, closely adapted to the entire host cycle, and does not exclusively use any one of the habitats most favoured by collectors (Chandler, 1978). Nonetheless, their habitat is fleeting, and a migratory association remains obligatory (Binns, 1979, 1980, 1981).

Seasonal abundance of hosts

That sciarid species are not primarily sporophore-feeders (cf. many Mycetophilidae (Russel-Smith, 1979)), may be inferred from the seasonal activity of their adults. Thus, univoltine, May-emergence of sciarids was reported by Altmüller (1975). Similarly, Heydemann (1953) recorded a spring peak in winter rye fields while Freeman (1945) also noted that, between 3 and 80 m, aerial populations of *Sciara sp.* peaked in May. With adult Mycetophilidae of many agaric-feeding species, an Autumn peak of activity (Russell-Smith, 1979) corresponded with the abundance of agaric sporophores at this time (Wilkins & Patrick, 1940).

E. S. Binns

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A NOTE ON THE DUKE OF BURGUNDY

With regards to J. D. Stewart's reference to the second brood of the Duke of Burgundy (*Hamearis lucina* L.) (*AES Bull.* Vol.43:55), he does not state whether or not he reared the larvae inside or outside. As I understand things, it is not uncommon when larvae are reared inside and the pupae kept cool for there to be a second brood. Indeed this is mentioned by F. W. Frohawk in his book on British Butterflies.

By coincidence, I also collected some ova on June 12 (same day as Mr Stewart) and these were reared indoors with the result that about 20% produced butterflies between July 30 and August 4. One other died during emergence in December, and a female successfully hatched on February 4. The rest emerged at their normal time during May and duly laid ova on cowslip.

Peter Tebbutt (7941)

MALACOSOMA AMERICANUM

The American Lasiocampid *Malacosoma americanum* (Fab.) is a notorius pest of fruit orchards, especially apple and cherry, throughout most of the USA. For this reason it should not be imported alive into the UK except under licence of the Plant Health Branch of the Ministry of Agriculture and Fisheries, and the present investigation has been carried out with their agreement.

Ova

These are laid in a large collar around a twig of the foodplant, in a similar manner to other species of this genus. The female covers the eggmass with a substance which soon hardens to a dark brown varnish, and this no doubt helps to protect the eggs from predators, parasites, diseases and inclement weather, from late summer when they are laid, until the following spring. The larvae seem to be fully formed within the ova several weeks before hatching, and this may perhaps play some part in ensuring that all the ova in a batch hatch simultaneously.

Larvae

From spring to early summer, very gregarious in all stages, resting on the outside of a large communal web-nest until all the readily accessible foliage has been consumed, and then moving on to make a new nest or extending the old one.

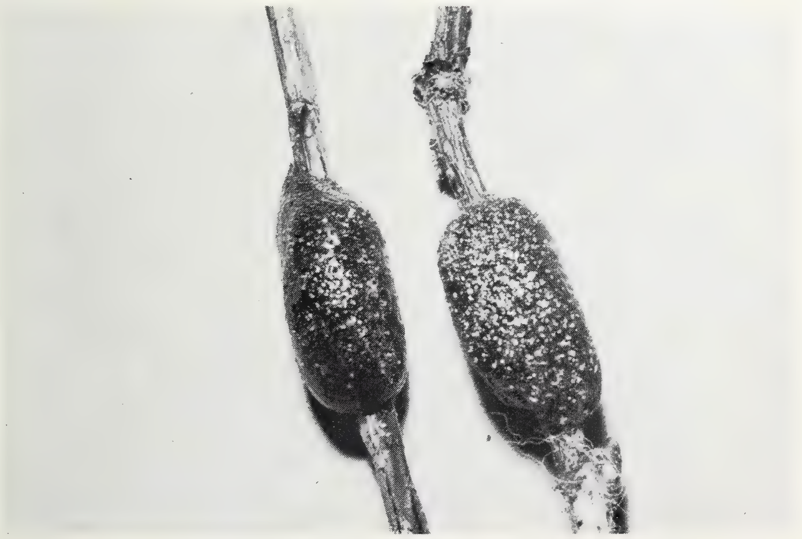

Fig. 14. Egg masses of *M. americanum*.

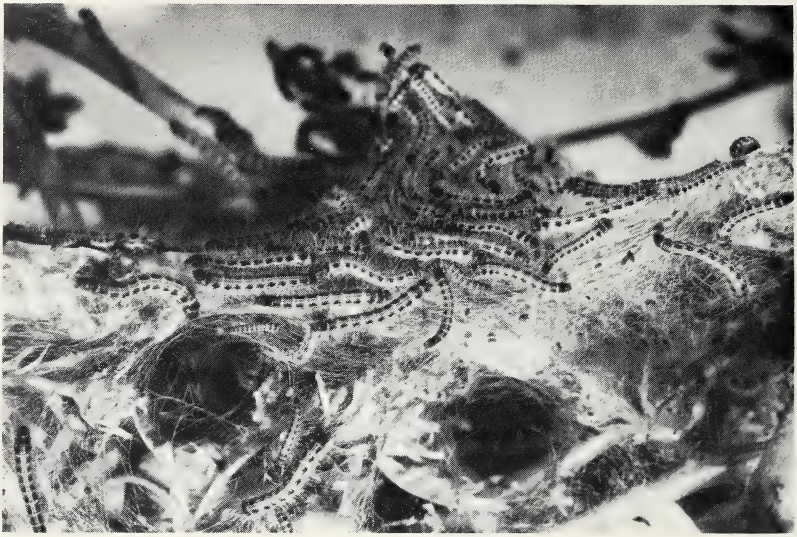

Fig. 15. Larvae of *M. americanum* settled on outside of their communal web.

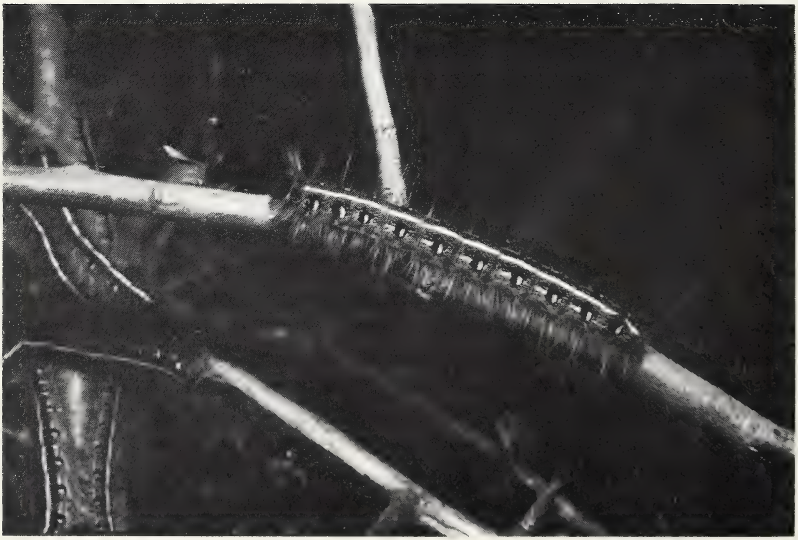

Fig. 16. Full-grown larva of *M. americanum*.

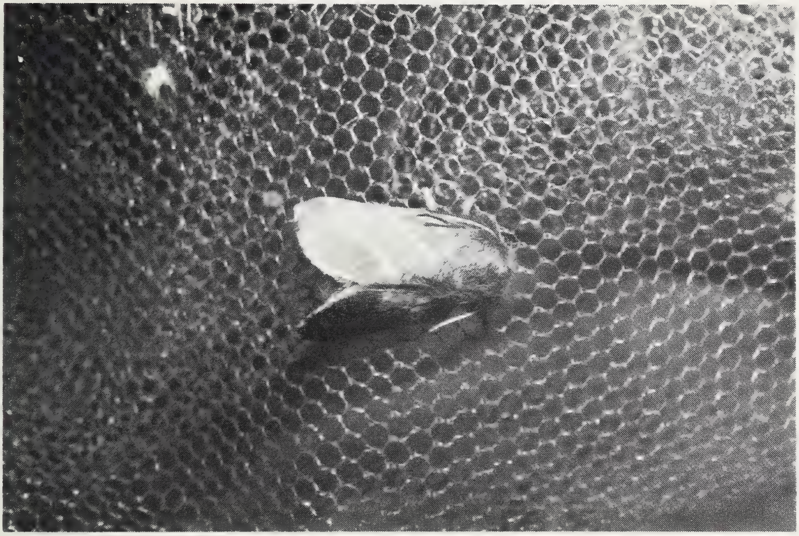

Fig. 17. Adult *M. americanum.*

Except at the time of a moult, larvae will drop off the nest at the slightest disturbance. In the wild state the foodplants include various kinds of rosaceous trees and bushes, particularly cultivated fruit trees. In captivity apple and hawthorn produced good rearing results.

Newly hatched larvae are yellowish-grey, but soon show their longitudinal stripes of yellowish-grey and darker grey, crossed by paler lines at the intersegmental divisions. At this stage the dark grey longitudinal lines in the subdorsal region are expanded in the middle of each segment to form a conspicuous black blotch or spot, and the pale and dark lines in the spiracular region are wavy. The head remains dull black in all stages.

In the later stages there is a marked change in the body colour and markings. The rather broad dorsal line is brilliant white, sometimes with a slight greyish tinge, and on each side of it there is an area which is variable in the amount of black and brownish orange flecking. Above the spiracular line there is a large whitish spot which is enclosed within the posterior part of a black blotch on each segment, the remainder of the supra-spiracular area being light bluish-grey with variable brownish orange flecking. The spiracular line consists of a narrow pale brown inconspicuous stripe. The body is sparsely clothed with shortish brown hairs which are slightly denser along the sides.

Cocoon

This is oval, whitish, substantial, and containing a yellow powder as in some other species of this genus. It is usually spun well away from the larval habitation.

Imago

Reddish-brown on all wings, but variable in tint. The two slanting parallel cross-lines on the forewings are creamy-white and almost straight, and the area between them may be slightly darker than the basal area, especially in females, or paler than the basal area mainly in males. The hindwings are without markings except for a very fine darker brown border in some specimens. The moths emerge in the late part of the summer.

John L. Gregory (4116)

CLOUDED YELLOWS OVERWINTER

During a holiday in my chalet in South Devon, between Sidmouth and Beer, last September, I observed large numbers of Clouded yellows (*Colias croceus* Geoffroy). Indeed it was the commonest butterfly in the area and the var. *helice* was also very common. This was interesting enough, but imagine my joy, while staying there again this Easter (1984) to discover that they were still there! There were the normal butterflies that one would expect to meet with in April, but the Clouded yellows were the most numerous. They had obviously overwintered in the area as larvae. The winter had been very mild and, also I think the most important factor, very dry.

B. J. Eveleigh (6202)

UNUSUAL OVIPOSITION CHOICE OF HOLLY BLUE

Regarding the observation in Vol. 42 ''*Curious oviposition choice of Holly blue*'', in late July 1983 in Bishops Stortford, I watched a Holly blue ovipositioning among the opening buds on a row of runner beans, despite the presence of large *Ilex* nearby and *Hedera* in bud on an adjacent wall. My efforts to rear this species on runner beans were a complete failure!

C. Watson (6811)

A FROG AT MY LIGHT

On September 8th 1983 I set up my Heath moth trap near an old stone wall on Bodmin Moor. Instead of the hoped for Cosmopolitan or Vestal, only eight moths were visible in the trap. Perhaps there were more. Short of dissecting the large frog squatting in the bottom amidst the egg trays, who knows what rarities there were?

Adrian Spalding (6741)

LOWLAND COASTAL FOREST BUTTERFLIES OF TANZANIA

I have always had a mild interest in butterflies but my interest was greatly increased by a friend of mine who arrived from England and whose interests were bird watching and butterfly collecting. However, since his main interest was birds and to watch birds in East Africa can almost be a full time occupation, he offered me his butterfly net. I visited a small forest called the Pugu Forest near Dar es Salaam and that was when I became hooked. I've since collected in many parts of Tanzania, but this article is about the butterflies I have collected over a two year period at the Pugu Forest (excluding the families Hesperidae and Lycaenidae, since I have yet to identify many of the specimens I have caught).

The Pugu Forest reserve is a small 22 sq km reserve 23 km southwest of Dar es Salaam. However, it is estimated that only 10 sq km of the original natural vegetation remains as a lot of clearing has taken place for subsistence agriculture and cutting of wood for fuel. The forest is one of the last remaining areas of lowland forests on the Tanzanian coast and if the present destruction continues unabated will, in the not so distant future, disappear.

In this coastal area of Tanzania there are two rainy seasons. The long rains from March through to May and the short rains which usually occur in November and December. I have found that most species can be caught the whole year round but the numbers were greatly increased during and shortly after the rains, with the exception of the family Acraeidae which I found in greater numbers about one month after the long rains. Most of the butterflies were caught with a small net of the type that folds with an aluminium handle. I found this easier to use than the kite type of net which I found cumbersome in the forest. The Genus *Charaxes* of the Nymphalidae family were caught using a trap in which fermented bananas were placed. This also attracted several other species of the families Nymphalidae and Satyridae. Species caught are listed below.

FAMILY PAPILIONIDAE

Papilio dardanus tubullus - Common, female uncommon
Papilio constantinus - Rare only one specimen caught
Papilio nireus lyaeus - Common
Papilio demodocus - Common
Papilio ophidicephalus- Common
Graphium angolanus - Common
Graphium leonidas leonidas - Common
Graphium philonoe - Common
Graphium antheus - Uncommon
Graphium polycenes - Uncommon
Graphium polystratus - Uncommon

Graphium porthaon - Uncommon
Graphium colonna - Common

FAMILY PIERIDAE

Appias lasti - Common, female uncommon
Appias epaphia contracta - Uncommon
Belenois gidica - Common
Belenois creona severina - Common
Belenois aurota aurota - Common
Belenois thysa thysa - Common
Dixeia orbona vidua - Uncommon
Dixeia pigea - Common
Dixeia doxa costata - Common
Mylothis agathina - Very common
Leptosia alcesta inalcesta - Very common
Colotis vesta catachrysops - Common
Colotis ione - Common
Colotis hetaera - Uncommon
Colotis incretus - Uncommon
Colotis antevippe gavisa - Common
Colotis evenina sipylus - Common
Colotis evippe omphale - Common
Colotis evagore antigone - Common
Eronia cleodora dilatata - Common
Eronia leda - Common, female uncommon
Nepheronia argia mhondana - Fairly common
Nepheronia thalassina sinalata - Common, female uncommon
Nepheronia buquetii - Common
Catopsilia florella - Common
Eurema hecabe solifera - Common
Eurema floricola nivea - Common
Eurema brigita - Common
Eurema hapale - Uncommon
Eurema desjardinsi - Fairly common

FAMILY SATYRIDAE

Melanitis leda helena - Common
Gnophodes betsimena diversa - Uncommon
Bicyclus campinus ocelligerus - Fairly common
Bicyclus anynana - Fairly common
Bicyclus safitza - Very common
Henotesia perspicua perspicua - Fairly common
Physcaenaura jacksoni - Very common
Ypthima granulosa - Very common
Ypthima impura paupera - Fairly common

FAMILY NYMPHALIDAE

Euxanthe tiberius tiberius - Uncommon
Euxanthe wakefield - Fairly common
Charaxes varanes vologeses - Common
Charaxes candiope - Common
Charaxes protoclea ozata - Fairly common
Charaxes lasti lasti - Common
Charaxes jasius saturnus - Uncommon
Charaxes castor flavifasciatus - Uncommon
Charaxes brutus alcyone - Fairly common
Charaxes violetta maritima - Fairly common
Charaxes cithaeron kennethi - Very common
Charaxes zoolina zoolina - Very common
Charaxes jahlusa argynnides - Uncommon
Charaxes etesipe tavetensis - Uncommon
Charaxes baumanni granti - Uncommon (see note (1))
Charaxes achaemenes - Uncommon
Charaxes guderiana guderiana - Uncommon
Charaxes ethalion littoralis - Uncommon
Hanma theobene blassi - Uncommon
Euptera pluto kinugnana - Fairly common
Euryphura achlys - Fairly common
Bebaeria mardania orientis - Rare
Euphaedra neophron neophron - Common
Hamanumida daedalus - Fairly common
Aterica galene theophane - Fairly common
Pseudacraea boisduvali crimenti - Fairly common
Pseudacraea lucretia expansa - Common
Neptis saelava marpessa - Fairly common
Neptis serena - Fairly common
Neptis laeta - Fairly common
Neptis kiriakofi - Fairly common
Neptis rogersi - Uncommon
Neptis nina - Fairly common
Neptis trigonophoru trigonophora - Common
Cyrestis camillus sublineata - Uncommon
Sallya moranti - Fairly common
Sallya boisduvali boisduvali - Fairly common
Sallya natalensis - Fairly common
Byblia ilithya - Very common
Byblia anvatara acheloia - Very common
Neptidopsis ophione velleda - Uncommon
Neptidopsis fulgurata platyptera - Fairly common
Eurythela dryope angulata - Very common
Hypolimnas misippus - Very common

Hypolimnas deceptor deceptor - Common
Hypolimnas dubius wahlbergi - Common
Hypolimnas usambara - Uncommon
Salamis parhassus - Common
Salamis anacardii - Fairly common
Junonia artaxia - Uncommon
Junonia natalica natalica - Very common
Junonia terea elgiva - Common
Junonia oenone oenone - Very common
Junonia hierta cebrene - Very common
Junonia orithya madagascariensis - Uncommon
Precis actia - Common
Vanessa cardui - Uncommon
Hachnoptera iole ayresii - Uncommon
Phalanta phanlantha aethiopia - Fairly common
Phalanta eurytis columbina - Fairly common

FAMILY DANAIDAE

Danaus chrysippus - Very common
Amaris niavius dominicanus - Very common
Amaris ochlea ochlea - Very common

FAMILY ACRAEIDAE

Bematistes epaea epitellus - Uncommon
Acraea sonata - Common
Acraea rabbaiae mombasae - Common
Acraea satis - Uncommon, female rare
Acraea admantha - Uncommon
Acraea cuva - Fairly common
Acraea quirina rosa - Fairly common
Acraea machequena - Uncommon
Acraea perpsichore neobule - Common
Acraea insignis balbina - Common
Acraea zetes acara - Uncommon
Acraea amemosa - Uncommon
Acraea pseudolycia astrigera - Uncommon
Acraea egina areca - Uncommon
Acraea petraea - Fairly common
Acraea aerita acrita - Common
Acraea pudeorella detecta - Uncommon
Acraea calderena neluska - Uncommon
Acraea onsaea - Uncommon
Aecraea natalica natalica - Very common
Acraea encedon - Very common

Acraea cabira - Uncommon
Acraea eponina - Very common
Acraea esebria - Uncommon
Acraea johnstoni johnstoni - Uncommon
Pardopsis punctatissima - Very common

FAMILY LIBYTHEA

Libythea labdaca laius - Uncommon

Besides the above families I have collected a total of 83 Lycenidae and Hesperiidae many of which I still have to identify. This makes a total for the forest area of 225 and I know there are several species I have not captured yet.

Note (1) This subspecies has only recently been described by Bernard Turlin and at the time of writing this paper is still in press.

T. A. Grant (7503)

THE MOTHS OF THE NIGHT

The moths of the night
In their nocturnal flight
On the wing till morning light.
Some of them colourful
Some of them bright
Yet some of them are as dark as the night,
But in the early morning light.
Then you hide from the warm sunlight
But as the day gives way to the night
Then you are on the wing till the morning light.

Jan Koryszko (6089)

SOME OBSERVATIONS ON BREEDING - 1983

On our Greek trip this summer I took some female Bath Whites, *Pontia daplidice*, which I was able to get home still alive. These I placed in a small cage with sprays of wild mignonette (*Reseda lutea*) and despite their exhausted condition the two surviving females deposited about six eggs on the flower head stems. This was on the 16th July. The yellowish eggs quickly turned to orange indicating they were fertile and hatched a few days later. I was due to go away again when the larvae had reached their third instar and our member Vernon Shearer kindly offered to see them through for me. The larvae fed up very quickly and pupated, producing imagines exactly 28 days after the deposition of the eggs. Such a brief life cycle enables the large build-up of this species as it migrates northwards during the summer and it is surprising that we do not see it more often here. My only experience of it in England was at Brighton in 1946 when there was a large invasion all along the south coast and the species bred on the downland behind the town.

At the beginning of August I was with my grandsons at Shoreham in Sussex where we watched Clouded yellows (*Colias croceus*) coming in over the waves as we swam. We then visited the downland above the Adur at the back of the town where we were pleased to see a resurgence of the Chalkhill blue at a locality which had been badly hit some years back by indiscriminate grazing. Also flying over the slopes were plenty of *croceus* and my grandsons had great pleasure in catching two females which subsequently laid eggs on sprays of melilot, *Melilotus* sp. This was on the 5th August. About twenty-four larvae resulted and these were fed in the open on lucerne. All pupated successfully by the third week in September, the rate of growth slowing noticeable with the cooler weather and shorter days. The imagines started to emerge on the 1st October, all males at first and then a few females, the last coming out on the day of our Exhibition, two months after the eggs were laid. One female was the beautiful intermediate colour form, half way between typical and the form *helice*, a delicate pale primrose. What the genetics of this form are I do not know; the other females were normal but with very reduced yellow markings in the black border.

Also on our Greek trip I collected a lot of larvae of the Spurge Hawk moth, *D. euphorbiae* and these I got home safely, nearly full-fed during our journeying in Greece. Within days they were ready to pupate and did so using the method which Mrs. Beer uses so successfully for *A. atropos*, i.e. in opaque plastic pots lined with tissue paper. The first moth emerged 15 days later, a male. Two weeks later another, a female, sat drying its wings, followed a day later by another male. This was now the third week in August. No further emergences occurred until the morning of the Exhibition, 8th October, when a further female emerged. The remainder look as though they will overwinter. They have been kept outside all the time. The pattern of emergence is most erratic in view of the fact that feeding up and pupation were almost contemporaneous.

While at Drama in Greece I also collected eggs and larvae of the Scarce swallowtail, *Iphiclides podalirius*, and these suffered a lot of losses in our journeying. However I got four home safely and these pupated, sleeved on plum in the garden. The imagines emerged within a few days of each other in the third week in September. As with the southern races of *P. machaon*, the Scarce swallowtail appears to produce three broods at least and is probably on the wing through the greater part of the year from early Spring to late Autumn in a series of overlapping broods, since at Drama we saw newly emerged specimens, those which were laying eggs and many very 'tatty' specimens which must have been on the wing for some while.

P. W. Cribb (2270)

OBSERVATIONS ON THE ADONIS BLUE (*LYSANDRA BELLARGUS*)

At the request of the National Trust, I have, for the last two years, conducted a butterfly population survey of an area of the North Downs in Surrey which is an excellent haunt of the Adonis blue. The purpose of the survey is to review the current land management practice to see whether it is favourable to the preservation of the land as a butterfly habitat.

The survey is done according to the Butterfly Monitoring Scheme of the Institute of Terrestrial Ecology at Monk's Wood Experimental Station. The system, for those unfamiliar with it, is explained by Mike Fuller in the AES Bulletin of August, 1983. Counting is done weekly, commencing with the first week in April until the last week in September, The same path is walked each week; in this case, where the area is open downland, across the middle of the fields for the most part, out of the shadow of hedges.

The terrain is a south facing slope of poor calcareous grassland. The area is about one mile from east to west by about six hundred yards north to south. Scrub, mainly hawthorn and dogwood, is cut down throughout the year, leaving the occasional yew and small patches of beech woods. The foodplant of the Adonis Blue, *Hippocrepis comosa*, is abundant.

The land is divided into fields separated by wire fences, paths and fences, or by narrow belts of beechwood. There is little shelter from trees, so ground temperatures tend to be high. The main difference between the fields is in the way that they are grazed. There are four categories of grass management:-

A) Not grazed - mean grass height 18-24 inches. This is the mean height of grass blades; flower spikes are higher but cast little shadow.

B) Lightly grazed by horses, three horses to about 12 acres - mean grass height 6-9 inches. During the flight period of the second brood of the Adonis blue in 1984, the horses were removed and the mean grass height was 9-12 inches.

C) Grazed constantly by cattle - mean grass height 4-6 inches.

D) Intensively grazed by sheep from October to April. This area has the poorest topsoil. Mean grass height 3-4 inches.

The following tables show the number of butterflies per hundred paces counted within one metre on both sides and in front as the transects are walked quite slowly.

Numbers of Adonis blue, according to grass height, per hundred paces
1982

		A	b	c	d
Week	Date	Ungrazed 18-24″	Horse Grazed 6-9″	Cattle Grazed 4-6″	Sheep Grazed 3-4″
7	16 May	0.20	0	0	0
8	Average	0.40	2.14	3.26	1.82
9	29 May	0.59	4.28	6.52	3.63
10	3 June	2.96	2.78	6.79	3.85
11	10 June	1.58	2.35	3.26	1.71
12	17 June	0.59	1.93	0.27	0.29
13	24 June	0.20	0.49	0	0
14	3 July	0	0	0	0
15	8 July	0	0	0	0
16	17 July	0	0	0	0
17	22 July	0	0	0	0.07
18	29 July	0	0	0	0
19	7 Aug	0.20	1.93	2.99	3.78
20	12 Aug	0.79	6.21	2.45	4.56
21	Average	0.40	9.32	1.91	3.53
22	30 Aug	0	12.42	1.36	2.50
23	2 Sept	0.59	10.71	4.62	5.71
24	9 Sept	0.02	4.28	2.45	2.43
25	16 Sept	0	0.64	0.82	0.50
26	Average	0	0.32	0.41	0.25
First Brood Total		6.52	13.97	20.10	11.30
Second Brood Total		2.00	45.83	17.01	23.33

Numbers of Adonis blue, according to grass height, per hundred paces 1983

Week	Date	A Ungrazed 6-9″ or 9-12″	B Horse Grazed 6-9″	C Cattle Grazed 4-6″	D Sheep Grazed 3-4″
7		0	0	0	0
8	22 May	0	0	0	0
9	30 May	0	0.43	0	0
10	4 June	0.99	4.70	1.63	0.42
11	16 June	0.59	15.20	8.42	3.14
12	23 June	0.79	4.67	2.17	4.21
13	26 June	2.17	7.92	0.54	3.07
14	2 July	0.20	4.07	0	0.86
15	10 July	0	0.21	0	0
16	16 July	0	0	0	0
17	23 July	0	0	0	0
18	30 July	0.20	0	0	0.14
19	4 Aug	0	0	0	0.14
20	13 Aug	1.98	3.21	6.79	9.27
21	23 Aug	3.56	23.55	43.75	40.01
22	27 Aug	3.75	23.77	37.22	17.83
23	3 Sept	2.08	14.22	20.23	9.49
24	10 Sept	0.40	4.67	3.26	1.41
25	17 Sept	0.59	0.49	0.82	0.21
26	24 Sept	0.20	1.28	0.27	0.42
First Brood Total		4.74	37.20	12.76	11.70
Second Brood Total		12.76	71.19	112.34	78.92

Conclusion

These figures show that a hot July and August, as we had in 1983, are highly beneficial to this butterfly. In 1982, the horse-grazed pasture gave the best figures, but there was a relative fall-off in 1983 in the second brood when the grass height was allowed to rise. Sheep, it appears, somewhat over-graze and long grass is clearly not advantageous. These findings suggest that a mean grass height of 6-9 inches is most suitable for the Adonis blue.

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J. A. D. Smith (5438)

TRAVELS IN FRANCE

Roger Wright's pleasure at seeing so many butterflies in France (*Bulletin* Vol. 42 No. 339) brought back exciting memories of my journey across France to the Upper Dordogne during July and August 1982. My wife and I spent one week journeying to and returning from our *gîte* in a small village called Soudeilles near Egletons in the Department of Correze. Two weeks were used to explore this beautiful, heavily wooded countryside with the splendid river Dordogne. We were able to spend a few days travelling farther south to places like Rocamadour in search of bright sunshine.

It seems to be an Englishman's delight to bemoan the weather — I will not continue on the subject since I was assured that matters improved considerably after I left France.

The intention of the holiday was not primarily to collect insects. However, I was well-equipped to do so. We tried to combine our varied interests in architecture, entomology, general natural history, food and wine so that we had a pleasant balance of all that was available. It is therefore not surprising that our busy journey has left several unforgettable memories.

Of these the first was a picnic near Chatillon-s-Loire, near the bank of that great river. We were able to find a man-made lake, bordered by wide expanses of grass encircled by mature trees, among which were oaks, limes and sycamores. Hardly had the cork been removed than I saw my first *Papilio*, then another, and another. My collapsed net so carefully packed away seemed to take ages to assemble. For once wine was forsaken and I was able to capture both the Swallowtail and the Scarce swallowtail. Shortly after this several Clouded yellows and one female *helice* were sighted. This was perhaps the most energetic lunch time of the whole holiday. The excitement, pleasure and delight at seeing for the first time in flight those butterflies that up to that moment were well-known photographs in books created a life-long memory; enforced later as we wandered to the edge of the Loire and captured f. *prorsa* of the Map butterfly.

We travelled south and eventually arrived at our *gîte*, a plain, clean and comfortable flat in a modernised presbytery. The countryside was totally different from anything seen in this country. The hills and steep-sided valleys were densely wooded, the chestnut being greatly favoured. The sheer bulk and compact greenness of the tree-covered hills over-shadowing roads and paths were at times strangely oppressive.

Yet, interspersed at irregular intervals were pathways, which, when followed, led to meadows, which were ready for the second or third hay crop of the season. It was here and along the pathways that butterflies were so numerous one could only wonder at their number and beauty.

My first Camberwell beauty appeared here and my wife found our first Black-veined white. The most lasting memory of this area may be searching the lichen-littered trees near our *gîte* and finding Camberwell beauties roosting in the late evening sun. Or, perhaps, the sight of Scarce coppers flying amongst the lush meadow grass during periods of bright sunlight that broke through the mountain mist so common in these parts.

The major part of our holiday was making the most use of the spells of bright sun that from time to time broke through the misty and inclement weather. Although sounding depressing it allowed time to be spent admiring many of the old buildings to be found in local villages. With the sudden arrival of the sun, butterflies would appear. So it was when we had stopped at the bottom of a steep-sided and wooded valley near the village of Laval and followed a narrow tarmac road a short distance when suddenly they were everywhere. The blackberry bushes were littered with Silver-washed fritillaries, Painted ladies, and also the occasional Southern white admiral and Southern comma were seen. Then turning a corner, on a stony and grass-covered steep slope we saw Piedmont ringlets in large numbers. The whole valley seemed alive with insects. The Scarce swallowtail was always present as were the 'whites' with the occasional Clouded yellow making an appearance.

As suddenly as it arrived the sun disappeared, heavily shrouded in mist and the butterflies hid themselves from our view amongst the foliage.

Our travels led us as far south as the spectacular town of Rocamadour, and from here we retraced our steps towards the town of Souillac. After leaving the small village of La Cave we found ourselves on a flat limestone plateau. The ground was covered with thyme and many close-growing fragrant plants and grasses. Around about were groupings of small, scrubby trees and bushes. It was one of those dull sultry days, very warm, without direct sunlight. The fragrance of the thyme added to this sultriness. As we walked we disturbed Chalkhill blues in thousands. I have never seen as many even during the glorious summer of 1976 when there were large numbers here in Wiltshire and Dorset.

It was not necessary to exert oneself, a gentle swing of the net would capture half-a-dozen. Amongst them were aberrations and forms, but the most memorable was the unplanned capture of the female form *syngrapha*. On nearing the trees one became aware of disturbing and seeing much larger butterflies. These proved to be the Hermit, Great banded grayling and the Dryad *Minois dryas*. One became distracted by the movement, that we almost failed to notice the fritillaries flying low above the ground plants. Amongst these, were, I believe, both the Glanville and the Violet fritillary.

During the remaining few days of our holiday there was great excitement in all districts because the 'champignons' had arrived and it appeared to be a good season. Almost everywhere one would see people disappearing into woods carrying baskets and plastic bags for the mushrooms they hoped to find. The prize, we were told, was the 'Girol' which I believe to be the *Chanterelle cantharellus cibaruis*.

I was collecting near the village of Hautefage in an extensive clearing surrounded by woodland. I was aware of an old lady and a young boy with their bags searching for mushrooms. Eventually we met, the old lady was curious about my bag and net.

"Bonjour monsieur, champignons?"

"Bonjour madame, mais non, papillons."

She was not too convinced, and then said, "Vous êtes Anglais?"

"Oui" I replied.

That seemed to explain everything, a sad shake of the head, and shrug of the shoulders expressed more than words what she thought about me, butterflies and the English in general! Anyone worth his salt would have been collecting champignons.

It was amazing how many butterflies could be found in a relatively small area which had been cleared only a year or two previously. Here I found the Queen of Spain fritillary, High brown fritillary, Knapweed fritillary, Spotted fritillary, Glanville fritillary, Heath fritillary, and the Marble fritillary. The Common blue, Short-tailed blue and the Sooty copper were all extremely common.

Apart from our interest in lepidoptera, there were other impressions which linger. We noticed the almost complete absence of small birds, the only exception was a loyal chaffinch which paraded regularly outside our *gîte* door. The most spectacular birds commonly seen were what I believe to be the White-tailed eagle (*Halialltus obicilla*). These magnificent birds were seen most days flying high over the hills and valleys, usually in pairs but at a distance from each other.

Then there were the field grasshoppers with their red under-wings which could be seen only when they flew or soared into the air. Also *Oedipoda cocrulescens* with its attractive bluish wings and lastly as one walked carefully around one would see the Green lizard (*Lacerta viridis*) patiently waiting for insects, other lizards or snakes.

Sadly the holiday soon came to an end, but made us all the more determined to return.

INSECTS SIGHTED

Iphiclides podalirius	Scarce swallowtail
Papilio machaon	Swallowtail
Pieris brassicae	Large white
Pieris mannii	Southern small white
Pieris rapae	Small white
Pieris napi	Greened-veined white
Colias croceus	Clouded yellow
Colias croceus helice	
Colias hyale	Pale clouded yellow
Colias australis	Bergers clouded yellow
Gonepteryx rhamni	Brimstone
Leptidea sinapis	Wood white
Aporia crataegi	Black-veined white
Polygonia egea	Southern comma
Polygonia c-album	Comma
Araschnia levana	Map butterfly
Aglais urticae	Small tortoiseshell
Vanessa cardui	Painted lady
Vanessa atalanta	Red admiral
Limenitis reducta	Southern white admiral
Nymphalis antiopa	Camberwell beauty
Inachis io	Peacock
Fabriciana adippe	High brown fritillary
Argynnis paphia	Silver-washed fritillary
Mesoacidalia aglaja	Dark green fritillary
Issoria lathonia	Queen of Spain fritillary
Pandoriana pandora	Cardinal
Brenthis daphae	Marble fritillary
Clossiana euphrosyne	Pearl-bordered fritillary
Clossiana selene	Small pearl-bordered fritillary
Mellicta athalia	Heath fritillary
Clossiana dia	Violet fritillary
Melitaea phoebe	Knapweed fritillary
Melitaea didyima	Spotted fritillary
Melitaea cinxia	Glanville fritillary
Chazara briiseis	The hermit
Brintesia circe	Great banded grayling
Minois dryas	The dryad
Erebia meolans	Piedmont ringlet
Erebiae aethiops	Scotch argus
Maniola juretina	Meadow brown
Pyronia tithonus	Gatekeeper
Lasiommata maera	Large wall brown
Lasiommata megera	Wall

Pararge aegeria	Speckled wood
Pararge aegeria tircis	
Nordimannia acaciae	False Ilex Hairstreak
Quercusia quercus	Purple hairstreak
Heodes virgaureae	Scarce copper
Heodes phlaeas	Small copper
Heodes tityrus	Sooty copper
Lampides boeticus	Long-tailed blue
Everes argiades	Short-tailed blue
Polyommatus icarus	Common blue
Cyaniris semiargus	Mazarine blue
Lysandra coridon	Chalk hill blue
Lysasdra coridon f. syngrapha	
Ochiodes venatus	Large skipper
Hesperia comma	Silver spotted skipper
Thymelicus silvestris	Small skipper

G. D. Trebilcock (2976)

REFERENCE

Higgins, L. G., and Riley, N. D. (1970) *A field guide to the butterflies of Britain and Europe*. Collins, London.

CATCH 'EM YOUNG

Recently I tried to explain to my four year old grandson that the temperature was too low for butterflies to be on the wing.

Far from being disappointed and quite unconcerned, he replied "It doesn't matter, I've got a nice warm net."

K. J. Ulrich (7502)

THIRD EUROPEAN CONGRESS OF ENTOMOLOGY

This Congress, organised by the Netherlands Entomological Society, will be held in Amsterdam from 25-29 August 1986. It is intended to hold three parallel sessions: (1) Ecology of Aquatic insects; (2) Specific environmental adaptations in terrestrial insects; (3) Theoretical and practical aspects of insect protection. Papers will be presented in general sessions by invited speakers and in addition papers may be submitted in any of these three special areas.

Those who might like to attend and receive further details should write to The Secretary for Congress Organization, Third European Congress of Entomology, Congress Office Vrije Universiteit, Postbus 7161, 1007 MC Amsterdam, Netherlands.

GENERAL OBSERVATIONS OF RHOPALOCERA IN THE ROUSSILLON REGION OF SOUTHERN FRANCE DURING EARLY JUNE, 1982.

Whilst England was experiencing one of the best spring periods for some years, my family and I were spending the first ten days of June as part of a camping holiday in the foothills of the eastern Pyrenees lying behind Argelès-sur-Mer. Our camp site lay a few miles to the west of Argelès and was situated amongst nettle trees (*Celtis australis*) planted to provide essential shade in the high season months. All around the site were vineyards with patches of wasteground, which provided me with lucrative areas for observing local butterflies of the region. On a few occasions I was able to explore a local district of the Albères hills of the eastern Pyrenees by following a narrow road leading through a gorge with a swiftly flowing river overhung by contorted outcrops of limestone schist which were extensively covered with cistus, juniper and stunted cork oak. The geological rock structure in this area is somewhat complex and variable, although much of the region is limestone in character.

The Roussillon region of southern France lies largely to the south and west of the river Aude. It consists of a plain enclosed by hills on three sides: on the north, the dry. empty schistic ridges of the Corbières hills and the "Little Pyrenees" of Fenouillèdes; on the west, the great mass of the Canigou peak which rises above 9,000 feet; and on the south the Albères chain of hills along which the Spanish frontier runs.

Roussillon is Catalan by culture and it is also the region of France which receives the lowest rainfall. However, a flow of such rivers as the Tech and the Têt coming down from the Pyrenees as well as the streams from the Cerdagne plateau provide sufficient water for irrigation and make this region a producer, like the Languedoc region, of vines and early vegetables with apricots as the special fruit crop of the area. The coastal region falls steeply away to the Mediterranean along a shoreline fretted by erosion into small coves and headlands.

The weather during our visit was perhaps not as settled as usual; heavy local storms occurred from time to time and sunny conditions did not prevail for lengthy periods. Despite this unreliability there were many hours of sunshine when butterflies appeared readily on the wing. All encountered species, as referred to below, were considered to be of wide distribution in the Roussillon region, and typified the butterflies which are likely to be on the wing during this attractive spring period in this southern region of France.

PAPILIONIDAE

Papilio machaon bigeneratus Vty (syn. *gorganus* Fruhst.)

This common species, as expected, was widely distributed, although only solitary imagines were recorded as being present amongst wasteground pockets and edges of vineyards and lowland cultivated land; the species appeared to be somewhat scarcer around the coast and central areas of the Alberès hills. Imagines were first brood insects and displayed a paler general seasonal coloration than those which I found elsewhere in central Europe; this fact is not perhaps of much significance as general coloration is often less stable amongst spring brood insects.

Iphiclides podalirius feisthamelii Duponchel

This sub-species (which is given full specific status by some authors) is not an uncommon insect in the south western region of France and the Iberian peninsular. I was therefore not surprised to encounter it in flight around the hills and vineyards. Markings in general differ little from those displayed by the nominate species, although the general coloration is greyish-white with broader black markings on the hindwing upper sides accompanied by a suffusion of grey scales around the basal area. I found many worn which indicated to me that the spring brood was nearly over at the time of my visit.

PIERIDAE

Pieris brassicae L.

This widely distributed and common species was to be found in large numbers around the cultivated inland areas away from the hills and appeared to have reached pest proportions around some of the small villages!

Artogeia rapae L.

This species although very widely distributed, was largely confined to lowland cultivated areas and wasteground pockets close to the coastal regions where both sexes of the spring brood were extremely common. I did however, find a few second brood insects which indicated that the species has an extended emergence pattern in this region from early March onwards.

Artogeia mannii Mayer

This southern species is easily confused with *rapae* and perhaps needs careful monitoring and recording to ascertain its real distribution areas in southern Europe. Although both sexes of the first brood were often found together with *rapae* in lowland cultivated areas, particularly around Argelès, this species appeared to favour higher elevations in the hills, where there was a greater abundance of its larval cruciferous foodplant available.

The imagines tended to be generally smaller in wingspan than *rapae*, and the upper side crescent shaped black spot on the forewings of females was clearly linked to the outer margin of the wings by distinctive black veins. Males were often very small and displayed a general pure white coloration with small or vestigial black apical and space three spots; the hindwing undersides of both sexes tended to be yellowish with variable grey dusting.

Artogeia ergane Geyer

This small montane species appeared to be confined to the inland region of the Albères hills behind Banyuls-sur-Mer, and as I only found a limited number of females during my visit, I concluded that the spring brood was nearly over at that time. Probably it appears on the wing in April and early May and is one of the earliest Pierids to be found in that region.

A close inspection is required to determine this species from *mannii* as both are very similar in appearance; generally the small wingspan and less distinct markings can help to determine *ergane* from other species of the *Artogeia* genus; furthermore, females tend to display a fuscous coloration with yellowish hindwing uppersides.

Artogeia napi L.

Strangely enough I found this common species to be very restricted in this particular region of France and was in fact only recorded on two occasions as a small colony around a patch of wasteground near a local farm lying close by to the camp. All imagines appeared to be first brood insects.

Euchloe simplonia Freyer *(syn. E. ausonia crameri Butler)*

Casting aside the curious taxonomic problems besetting this species, I found males to be common in flight around the coastal hilly areas as well as general wasteground adjoining vineyards and olive groves wherever cruciferous plants were reasonably plentiful. As I failed to find any females during my visit, I deduced that the spring brood was only just appearing on the wing. I found there to be little variation in general coloration and markings amongst imagines found, although at times the mottled green pattern of markings on the hindwing sides was on occasions yellowish and less boldly displayed.

Anthocharis cardamines L.

This species was found to be extremely local and was only discovered to exist as a small colony within an area of damp wasteground adjoining an extensive area of vineyards lying behind Argelès. I suspect that its distribution is largely governed by the presence of its major larval foodplant, Lady's Smock (*Cardamine pratensis*).

Anthocharis belia euphenoides Stdgr.

Although I have no doubt that this beautiful southern species is widely distributed in this region of France, I have to admit that I only encountered one male during the last day of our visit, in flight in an isolated patch of hill pasture in the central region of the Albères hills. It is likely that this species is more abundant in the earlier part of spring, although its emergence appears to be largely governed by altitude factors. The bright sulphurous general coloration is unlikely to cause any visitor much confusion over identification!

Colias crocea Geoffroy

Only a very limited number of males were found on the wing around the hilly coastal region behind Banyuls, although I have little doubt that this species is more widely distributed in the later summer months.

Gonepteryx cleopatra europaea Vty.

I would have been very disappointed if I had not seen this splendid butterfly around the camp and elsewhere as it is so widely distributed throughout south western Europe! In fact this was one of the few species which showed no temerity towards making frequent appearances within the campsite whenever there was plenty of sunshine. Most imagines found were clearly male, and I only encountered females searching for larval foodplant in the inland hill regions of the Albères where the species appeared to be widely distributed. Although I did from time to time search amongst the foliage of various buckthorn bushes for larvae and ova, my efforts were not fruitful.

Gonepteryx rhamni L.

This species was certainly not as common as its southern cousin mentioned above, although I found it to be reasonably plentiful amongst the lower cultivated areas around Argelès and close to the camp. The male imagines appeared worn in condition thereby indicating that this species' spring flight period was nearing an end.

Leptidea sinapis L.

This species was very restricted and was only encountered as a small colony within a sheltered pocket of wasteground lying close to a vineyard in the Albères foothills within easy walking distance of the camp. The distribution of this colony appeared to be entirely governed by the presence of a variety of leguminous plants and the general moist conditions prevailing. I suspect that it is more widely distributed in the deciduous woodland regions further to the west from the Roussillon region.

LIBYTHEIDAE

Libythea celtis Laich

Despite the abundant presence of the larval foodplant (*Celtis australis*) within the campsite and the local hills beyond, this interesting butterfly was only found on two separate occasions well away from the camp in the upper regions of the Albères hills. On each occasion a single imago was seen in flight gliding around small river pools and adjacent trees and bushes with a small gorge. This species is known to favour the light woodland areas amongst hills throughout southern Europe and after hibernation remains on the wing for as long as two months. The following single annual brood is on the wing for a short period during August and early September before retiring into hibernation for the best part of six months. Strangely enough this species also appears to display migratory instincts which often carry it to central areas of Europe far away from the presence of its larval foodplant.

NYMPHALIDAE

Limenitis reducta schiffermuelleri Higgins

This beautiful woodland species was always to be found gliding around within the dappled sunlit areas close to hillstreams and local mountain gorges lying within the southern region of the Albères Hills. I never failed to admire the graceful gliding flight as well as its effortless ability to avoid capture when disturbed. Most imagines were considered to be male and would have been early spring brood butterflies. I did note that some of them appeared to be distinctly small in wingspan although this observation was not perhaps a significant fact as I had made similar observations elsewhere when I encountered this species in Tuscany a few years back.

Nymphalis antiopa L.

During my last day of foraging in the local hills behind the camp, whilst I was admiring the flight pattern of the former species and the manner in which it appeared to stake out territorial boundaries, I suddenly spotted gliding across the river a large curious black butterfly which landed at my feet, much to my amazement! Although the butterfly was clearly worn, there was no mistaking its identity with the presence of the pale yellowish marginal borders, not to mention its overall size. A few minutes later another one appeared on the scene and joined its brother close to my side; this second butterfly appeared to be in better condition and in fact I was surprised to see this species so late in the spring as both butterflies had obviously spent many months in hibernation and had presumably been on the wing for many weeks thereafter.

There was little evidence of this species' larval foodplant (*Salix* ssp.) close to hand and I was therefore, somewhat curious to know where they had appeared from unless they had migrated from some site lying further to the west.

Nymphalis polychloros L.

I only recorded one sighting of one imago of this species as flying around in a desultory fashion amongst shrubs and small trees by the side of a local vineyard behind Argelès.

It is likely that this species is more widely distributed within the hills and close to rivers and streams wherever its larval foodplant proves to be reasonably abundant.

Vanessa atalanta L.

This common migratory species was in fact rarely seen throughout this holiday visit, and was only recorded as solitary imagines within a wasteground pocket near the campsite where there was much thistle and knapweed growing. This species is likely to be very common in the later summer months of the year.

Cynthia cardui L.

This widely distributed migratory species was certainly not uncommon, and was readily encountered along roadsides, rough uncultivated areas and low meadowland pastures wherever there was an abundance of thistle and knapweed. All imagines appeared to be in good condition and many have migrated across the Spanish border within a few days of being seen.

Aglais urticae L.

Few imagines of this common species were recorded as being found in this region. In all probability my visit fell between spring and summer broods which would have accounted for the paucity in numbers present.

Pandoriana pandora D. & S.

This large Fritillary was only sighted on one occasion in mid-afternoon in the higher regions of the Albères hills as it careered across the cistus covered slopes in search of suitable flora. This species is widely distributed throughout southern France and the Iberian Peninsular, and although it is a double brooded insect in its southern extremities, it tends to be single brooded elsewhere in southern Europe and is more likely to be encountered from late June onwards in flowery hill meadows and montane districts.

Melitaea cinxia L.

A small colony of this widely distributed Fritillary was found fluttering around the roadside in the Albères hills behind the camp; all imagines were small and in worn condition which indicated that this species' flight period was nearly over. The imagines appeared to be attracted by the heat being cast off the road surface as they often settled on the ground and remained in a basking position for some time before taking flight upon being disturbed.

Melitaea phoebe D. & S.

This species was only found amongst high hill pastures above the old southern Roussillon town of Arles-sur-Tech in the Haut Vallespir valley which lies to the south of Pic du Canigou. The imagines found were particularly fresh and displayed the strong bitonal coloration which is so typical of this species.

Mellicta athalia celadussa Fruhst.

My visit appeared to be somewhat early for this common species to be fully on the wing, and I only encountered a few freshly emerged males amongst the higher pastures in the Albères hills behind the camp. The general coloration was bright fulvous with regular linear markings.

Mellicta parthenoides Kef.

A small colony of this variable and difficult species to identify in the field was found in flight in the same area of the Albères hills where *cinxia* was found. Both species were in flight together, although *parthenoides* seemed to be more attracted to the flowering bramble bushes at the roadside and less attracted to the road verges and the warmth of the road surfaces.

This species is generally smaller than *athalia* and the coloration is generally a deeper orange; the black markings are less emphasized although the upper forewing black discal spots are often heavily marked; the upper hindwing discal area is often unmarked, although this feature is not always a sound determining factor. Furthermore, *parthenoides* appears generally to favour hilly pastures and even alpine conditions and is less common at lower elevations. A genitalia study of individual insects may be necessary in order to determine identity of species with certainty in this region.

Mellicta deione Geyer

A few somewhat worn specimens of this species were found amongst the higher exposed slopes of the Albères hills behind the camp towards the end of my visit. I experienced considerable difficulty in identifying it at first with certainty as the general coloration, size and markings were very similar to those of *parthenoids* as described above. However, the main distinctive features were perhaps the less fulvous coloration, denser series of discal and post discal spots and lunules on both the fore and hindwing upper sides with a particular indeterminate series of black spots in the basal area of the hindwing upper sides; the dumb-bell shaped black markings towards the base of the forewing uppersides was usually well defined, although some male imagines did not always display such a regular shaped marking. A careful inspection is required when determining the identity of this species as it is so often found in flight with both *parthenoides* and *athalia* in hill and montane districts of south west Europe.

Eurodryas aurinia Rott.

A small colony of this species was found close by the camp in rough meadowland in the Albères foothills. All those found were male and were brightly coloured with a tendency to be a little larger than their northern and central European counterparts. Although the fact requires confirmation, the local form of this species in the Roussillon region may prove to be a transitional race to the much larger sub-species *E. aurinia beckeri* H-S, which is indigenous throughout the Iberian Peninsular.

SATYRIDAE

Melanargia galathea lachesis Hubn

This aristocratic southern form of the Marbled white was not uncommon amongst wasteground areas near the camp and was more widely distributed in the higher regions of the Albères hills behind Banyuls. The extended white areas within the discal and basal areas of both the upper fore and hindwings were particularly distinctive, and furthermore, I found both sexes to be notably larger in wingspan; the average male wingspan from apex to base was at least 28 mm and the one female which I caught close to the camp had an amazing wingspan of 31 mm. As all imagines found were in excellent condition, I deduced that this sub-species had not reached its full flight period at the time of my visit.

Melanargia occitanica Esper

This is a distinctive species which is largely confined to the south western regions of Europe and occurs as widely distributed colonies amongst dry hill and localised areas. However, I found the species to be rather restricted and localised within the Albères coastal foothills behind Banyuls where males dashed around in a restless and erratic manner in the heat of the mid-day sun. The most distinctive feature of this species is perhaps the ochreous brown veins displayed on the underside of the hindwings which readily assist the visitor over identification. As no females were recorded throughout my visit, I concluded that this species is likely to be more widely distributed towards the end of June and early July in this region of France.

Hipparchia semele cadmus Fruhst

My visit was clearly too early for me to find this common southern form of the Grayling, and I was not therefore, surprised only to find one fine male in solitary isolation along a stony track in the Albères foothills behind the camp. This species is certain to be widely distributed from late June onwards throughout the eastern Pyrenees and other montane areas of southern France. The hindwing uppersides display bright orange submarginal markings and female imagines in particular display a brighter contrast of markings with broken yellowish post-discal markings on the upper forewing areas. The underside of the hindwings displays an irregular bright post-discal whitish band surrounded by attractive mottled configurations.

Maniola jurtina hispulla Esper

This widely distributed and common southern form of the Meadow brown was barely on the wing at the time of my visit and only a few males were recorded amongst vineyards in the coastal foothills behind Banyuls. This species is likely to be extremely common in the later summer months.

Pyronia bathseba pardilloi Sagarra

This sub-specific form of the Spanish Gatekeeper I found to be perhaps the most widely distributed Satyrid throughout the Roussillon region and was certainly recorded within every visited area. Both sexes were encountered frequently whilst fluttering around roadside verges as well as wasteground pockets in vineyards and amongst the "maquis" covered Albères hills. The bright yellow discal band displayed on the hindwing undersides was generally well developed; the adjacent submarginal white-pupilled ocelli also were generally well defined although variable in number.

Coenonympha pamphilus L.

As I only encountered one somewhat worn male amongst wasteground within the camp precinct and due to this insect's poor condition I was unable to determine whether or not it had any sub-specific features. As this common and variable species is widely distributed throughout Europe, I have no doubt that it is likely to be found in abundance throughout the region amongst both cultivated and wasteground areas, wherever there are many varieties of grasses present. There are probably at least three broods throughout the spring and summer months.

Pararge aegeria L.

This attractive woodland species was to be found in abundance both within the camp precinct and within shady spots in the Albères foothills. The attractive orange patterned uppersides of both fore and hind wings provided the imagines with excellent camouflage. The females were always larger in wingspan and displayed paler coloration with less mottled density.

Lasiommata megera L.

This widely distributed species was in fact only recorded as being present in limited numbers in a few restricted dry wasteground patches amongst lowland vineyards lying behind Argèles. It is likely that my visit fell between the early spring and the main summer broods and is therefore, likely to be more frequently found amongst dry open terrain from July onwards.

Lasiommata maera L.

Rather to my surprise I only recorded one sighting of a male fluttering around a path within the camp precinct towards the end of my visit. As this is certainly not an uncommon species throughout southern Europe, I deduced that imagines are more likely to be found from late June onwards until September in two broods. This species favours similar habitat conditions to that of the preceding species and is likely to be particularly common at higher elevations.

LYCAENIDAE

Nordmannia esculi Hubn.

This somewhat dull southern species of Hairstreak is reasonably widespread in distribution throughout the Iberian Peninsular and southern France stretching from the eastern Pyrenees to Provence. However, this species' localities are invariably confined to those where holm oak (*Quercus ilex*) and cork oak (*Quercus suber*) are indigenous. I found both sexes often fluttering around the lower branches of these two oak species in the Albères foothills as well as amongst vineyards close by the camp; imagines often alighted on the lower foliage where they enjoyed basking in the full sunshine.

This species can often be mis-identified and confused with the Ilex hairstreak *(N. ilicis Esper)* as the general coloration and markings on the fore and hindwing undersides are similar; *esculi* is however, generally smaller in wingspan and the red submarginal spots present on the hindwing undersides are less developed and only faintly edged with black internal borders: furthermore, the post-discal irregular white band is often totally absent from the underside of the forewings. General coloration is less dense than that on ilicus and the females displayed only a vestigial orange flush on the upper forewing discal area. As I did not record *ilicis* in this region of France, it is likely that *esculi* has a slightly earlier flight period and perhaps only overlaps the former species towards the end of June.

Lycaena phlaeas L.

This common species was regularly found in small numbers around dry paths and stony wasteground areas in both the Albères foothills and local vineyards. I did note that the males often appeared with a display of dark fuscous coloration on the forewing uppersides and one particular specimen was almost melanic save a reduced area of reddish gold towards the basal area of the forewings.

Syntarucus pirithous L.

One late afternoon whilst introducing my seven-year-old younger daughter to the delights of Nature amongst an olive grove close by the camp, she pointed out a small Lycaenid which appeared to be taking some interest in a small patch of bramble in flower. Upon a closer examination I was delighted to tell her that this was *Lang's Short-tailed blue!* The imago was in fact a male and proved to be the only specimen of this species sighted throughout my visit and clearly shows that the eyesight of one's younger children is often of inestimable value in the field! This species is widely distributed throughout southern Europe, especially around coastal regions of the Mediterranean and appears on the wing as early as March with two or three broods up to late September; it is likely to be particularly common amongst wasteground areas with plenty of leguminous plants in evidence.

Everes argiades Hffmsgg.

This somewhat local southern species of south west Europe I found to be reasonably common in scattered colonies around lower wasteground areas with a reasonable abundance of flora; as the flight pattern was rather weak imagines tended to avoid wandering far from their chosen colonial limits, and they spent much of their time fluttering around various leguminous plants and small bramble bushes in flower. Only the males display a bright violet blue coloration on the forewing uppersides; whereas females display a general brown coloration throughout such uppersides. The coloration of the fore and hindwing undersides was silvery-grey with a few indeterminate discal spots. The anal lunules in the hindwing undersides adjacent to the small tails were very reduced in size and often almost obsolete. Most imagines were very small with a forewing length between apex and base of as little as 11 to 13 mm. In some instances they were so small as to cause mis-identification with the Little blue (*C. minimus*). This species has at least two broods throughout the spring and summer and is likely to be encountered at any time from April through to early September.

Cupido minimus Fuessly

Although this is a widely distributed species throughout Europe, I have to report that I only encountered it as a small restricted colony within a high hill pasture area in the Albères hills where I also recorded *argiades* as being present. It is likely to be confined to the richer mountain pastures and meadowland in the central Pyrenees and less common in the drier regions to the east.

Celastrina argiolus L.

This species was not uncommon around small streams in the Albères hills as well as a stream which bounded the camp precinct. Both sexes were sighted and appeared to be first brood insects in view of the less wide black marginal borders displayed on the female upper forewings. This was the only species which I found on the wing in the late hours of the afternoon — often as late as 6 o'clock when other species had retired to roost.

Galaucopsyche alexis Poda

This is a species which largely inhabits the hill and montane upper pastures and rich meadowland areas of southern Europe, and it was therefore, no surprise to me to find only one worn male imago amongst high pasture in the Albères hills. This species is also generally one of the earliest Lycaenids to appear on the wing and is more likely to be encountered towards the end of April and throughout May in suitable habitats. Larval foodplants comprise a variety of leguminous plants.

Iolana iolas Ochs.

I recorded sighting two males of this large species in flight around an extensive patch of bramble in the higher regions of the Albères hills on the last full day of our visit to the Roussillon district, amd as I did find this species' foodplant, Bladder senna (*Colutea arborescens*) reasonably plentiful in this district, it was not perhaps surprising that I should encounter this lovely butterfly on the wing. This species is largely restricted to areas where there is the presence of its foodplant and is on the wing from mid-May to the end of June as a single brood; a partial second may appear in certain areas towards the end of August and early September.

Polyommatus icarus Rott.

This widely distributed species was reasonably abundant in lowland pasture areas and wasteground around local vineyards behind Argelès; I did not find this species present in the Albères hills, although I feel sure that restricted colonies do exist within suitable sheltered pastures in the lower foothill areas.

Scolitantides orion lariana Fruhst.

During a day visit in Haut Vallespir valley which lies between the Massif du Canigou and the Albères chain of hills I and my family spent a memorable couple of hours or so traversing by foot one of the most spectacular gorges in this region; this was Les Gorges de la Fou which lies close to Arles-sur-Tech and winds its way for over a mile into the northern flanks of the valley below the majestic Canigou peak. After this weird and perhaps claustrophobic experience it was with some relief that we finally entered bright sunshine amongst the mountain slopes where the first butterfly encountered was a freshly emerged male of this sub-species of the Chequered blue! This is considered a local species throughout southern Europe and is probably particularly scarce in this western extremity of its range. The notable feature of this sub-species is its very dark general coloration on the fore and hindwing uppersides with only a vestigial trace of a dull blue basal flush on the upper forewing the chequered cilia and the distinctive pattern of black spots displayed on the undersides of both fore and hindwings and well as the bright red sub-marginal band on the hindwing undersides, were in fact indistinguishable from those markings displayed by the nominate species. This sub-species appears to be confined to montane districts with a partiality towards rough stony areas where *Sedum* ssp. abound. The flight period extends generally from late June to the end of July and my recorded sighting was perhaps earlier than usual.

Lysandra bellargus Rott.

This attractive and well-known species was also found in plentiful numbers above Les Gorges de la Fou and the sight of the males fluttering around the rocks and shallow pools of water enthralled my family — this was certainly a treasured experience for us all. I did not record this species elsewhere in the Albères hill nor behind Argelès; it is likely therefore, that it is confined to alkaline areas with rich vegetation with a good variety of leguminous plants and is less inclined to colonise amongst the drier coastal districts.

HESPERIIDAE

Thymelicus acteon Rott.

My first discovery of this species was within a few metres of our tent after our first night under canvas, when I discovered a pair carrying out a courtship dance in the early morning around a clump of long grass! I later discovered this species to be common within the camp precinct and was also recorded elsewhere as restricted colonies in the Albères foothills. Although this species appears to be widely distributed in southern Europe, it is largely restricted to meadows and areas of wasteground with a reasonable abundance of brome grass which is the larval foodplant.

Thymelicus lineola Ochs.

Although this is also a widely distributed species throughout Europe, I only encountered a few of both sexes, in lowland wasteground areas behind Argelès in the vicinity of local vineyards and olive groves. I did not find this species present in the Albères foothills.

Ochlodes venatus faunus Turati

This common and widely distributed species was found to be common in a restricted area of high pastures in the Albères hills where there was a reasonable abundance of flora present. Although I did not record it amongst lowland wasteground and cultivated areas behind Argelès, I have no doubt that it exists in such areas and is more likely to be found from late June onwards until September in at least two broods.

GENERAL CONCLUSIONS

Although I have to admit that the general variety of species recorded was not spectacular for such an interesting and neglected district of France, my observations were not disappointing and confirmed to me that this is a useful district for the amateur entomologist to commence a study of southern European Rhopalocera. My visit was perhaps a little on the early side for many fritillaries, and a later visit from mid-June onwards would no doubt prove to be more worthwhile; this district is however best avoided from mid-July onwards as the coastal area becomes intolerably crowded with tourists and holiday-makers and the high summer temperatures will make foraging in the hills a very uncomfortable experience! Unfortunately most Satyrids do not appear fully on the wing until early July, and therefore, a certain amount of undue exposure to the sun cannot be entirely avoided if a holiday is chosen at this period of the summer in order to study species of this particular family. Most Pierids, Nymphalids and Lycaenids will however, be found throughout June, and this is certainly the period which I would recommend for such a visit when the countryside is still attractive and the French roads uncluttered with heavy traffic and the attendant frustrating delays which are sure to be experienced from mid-July onwards.

N. F. Gossling (5169)

NEWS RELEASE FROM LONDON BUTTERFLY HOUSE

A new outdoor enclosure for British butterflies, along with a two-acre wild flower meadow, was officially opened at The London Butterfly House by botanist and broadcaster David Bellamy on Monday 16th July at 11.30 am.

As a botanist and conservationist David Bellamy has a great interest and understanding of the wide range of plants that attract butterflies. He is also dedicated to the improvement and return of butterfly habitats. Weeds, such as nettles and thistles, are important to butterflies and caterpillars, but the spread of urban development and intensive farming does not allow for such plants and the once rich hay meadows and rough pastures have all but disappeared.

''We must learn to share our countryside and our lives with these beautiful living things,'' says David Bellamy. ''Just imagine what life would be like without these flowers and insects to see all around us.''

THE NEW BUTTERFLY ENCLOSURE

This latest extension to the London Butterfly House resembles a suburban garden in size. It is netted over, but not glassed, so that the normal climate will encourage native butterflies to breed. The site is some 70 feet long by 37 feet wide and has been landscaped to provide a variety of butterfly habitats — a patch of heathland, a chalk mound and a damp woodland — attracting butterflies like the Small copper, Brimstone and Purple hairstreak as well as the more common Red Admiral, Clouded yellow and Painted lady.

Along one side of the enclosure an herbaceous border provides a butterfly oasis of nectar plants such as a lavender, buddleia, hebes and michaelmas daisies and it is hoped that visitors to the enclosure will be inspired to plant out their gardens in a similar way.

THE WILD FLOWER MEADOW

This meadow, unique in the Greater London area, has been created by sowing at least 52 species of grasses and wild flower seeds, like meadow buttercup, cornflower, cocksfoot and stinging nettle. Well-known biologist Dr Miriam Rothschild has provided seeds harvested from her own meadow and country garden. It is hoped that the beauty of this new meadow will encourage not only gardeners but local authorities, parks departments and even motorway planners to create similar areas.

EXTINCT LARGE BLUE BUTTERFLY MAY RETURN

The first large blue butterfly to be seen in Britain since the species officially became extinct in 1979 has emerged from its nest in a remote locality in the West Country, the World Wildlife Fund announced today.

It is the first encouraging sign of an experimental effort, being sponsored by Sir Terence Conran's company, Habitat, to re-establish the large blue in some of its old haunts. Only 20 years ago, it was a fairly common species in the West Country — and in many parts of continental Europe — but it rapidly disappeared from most of its original range. One of the main causes of the butterfly's demise was myxomatosis in the late 1950's, which drastically reduced the grazing rabbit population, together with a lack of sheep grazing at about the same time. The result was that previously suitable large blue habitats became terribly overgrown and the butterflies disappeared.

But careful, artificial management of old sites has made it possible, in theory, to organise a re-introduction of continental stock. The large blue still survives in local populations in Europe over a wide area from Southern Sweden to Southern France and at least one of these is considered to be almost identical to the old British variety.

The large blue has a very complicated life style and preparations for this trial re-introduction began several years ago. The butterflies rely entirely on south-facing, grassy slopes with short turf and low scrub on which both wild thyme plants and *myrmica* ants are present. The adult life span is barely more than a couple of weeks, during which time it lays its eggs on the thyme buds. After about a week the caterpillars hatch out, eat as much as they can, and then drop to the ground. *Myrmica* ants come along and carry them off to their nests, where they 'milk' the caterpillars' honey glands. The caterpillars then spend the next 5-6 weeks feeding on ant larvae in the nest before going into hibernation for the winter.

They begin feeding again in the spring, pupate and emerge in full glory as butterflies. Altogether they spend about ten months preparing for this debut.

The first of the butterflies, which were introduced as caterpillars to ants' nests last year by scientists from the Institute of Terrestrial Ecology, emerged on Tuesday. But it will be another three or four years before it is really known if the attempted re-establishment has been successful — there are unfortunately no guarantees.

The scheme to re-establish the large blue is one of many butterfly conservation projects which the World Wildlife Fund is working on at the moment.

Over half of Britain's butterflies are declining in numbers and for several species a crisis point has been reached. If action had been taken soon enough, the large blue might have been saved — it would be only too easy to make the same mistake again with other species.

For further information please contact: Mark Carwardine or Susan Dark, 11/13 Ockford Road, Godalming, Surrey GU7 1QU. (World Wildlife Fund.)

BOOK REVIEWS

A practical guide to the butterflies of Worcestershire by Jack Green. Pp. 34, 8 coloured plates. Worcestershire Nature Conservation Trust 1982. Price £2.80.

This little publication has only just come to our notice, although it was published two years ago. A number of little local County guides have now been published in recent years and this is one of the best of them. It manages to illustrate no fewer than 64 photographs taken from nature on its eight colour plates. Our one criticism of these is that the printing, particularly of the backgrounds, is on the dark side.

This booklet is more than just a list of butterflies. Many years of work and the support of a number of recorders have gone into its preparation. The booklet is divided into a number of chapters and discusses the butterflies from several aspects. The inside covers give us both a place-name map and a geological one of the county. We are given an overall view and this is followed by discussion on when and where; habitats; frequency and distribution. The butterflies are then discussed both under their frequency and under their distribution and finally chronologically under the month one might expect to find them. There is a final short section on conservation and the possible future of butterflies in Worcestershire. One factor that has worked to their advantage in the past has been the management operations in woodlands owned by Messrs Harris (of paintbrush fame) and used to produce the brush handles. Their management schedule produces the ideal open edges so loved by many woodland species.

In addition to the colour plates the booklet is attractively presented in a coloured cover and is well worth the modest price.

Brian O. C. Gardiner

The Dictionary of Butterflies and Moths in Colour by Alan Watson and Paul E. S. Whalley. Peerage Books 1983. Price variable £4.00 to £6.95.

This book is a remaindered and mutilated re-issue of one with the same title (but different authors and publisher) which we extensively reviewed in *AES Bulletin* Vol. 35: 41-44. For some incredible reason we do not understand, the original senior author's name (Eric Laithwaite) has been dropped entirely and so too has his extensive and excellent introductory chapter. Otherwise the colour pages and text are as before. We feel that such important and vital omissions should either have been commented on, or the book's title should have been changed. There are, after all, books that have been in print for upwards of two centuries and yet, in spite of a succession of editors, and many, often major, changes, still retain the original senior author's name in the title.

Nevertheless, at the remaindered price (which our observations show varies from shop to shop) it is good value for the coloured illustrations. Copies of the original issue we have seen priced in the secondhand dealers' lists at £16.00.

Brian O. C. Gardiner

RED ADMIRAL ABUNDANT IN CAMBRIDGESHIRE

On 25th September, 1982, a warm sunny day, in a sheltered garden on the edge of the Cambridgeshire Fens, at least forty Red admirals (*Vanessa atalanta* L.) (together with four Comma butterflies (*Polygonia c-album* L.)) were observed actively feeding on rotting pears.

This continued until 5.40 pm when up to eleven at any one time settled on golden privet, all with their wings wide open, catching the last rays of the setting sun. 1982 was apparently a good year for Red admirals, but is a gathering of this magnitude exceptional and, since some had already settled down for the night, can anyone please explain what purpose was served by extending their wings wide open to catch the very last weak rays of sunshine until it faded completely?

K. J. Ulrich (7502)

HUMMINGBIRD HAWKMOTH IN MIDLANDS

On 21st July last year, a warm hazy morning, I noticed a solitary specimen of *Macroglossum stellatarum* L. hovering around a piece of rough ground within 100 yards of my house in Halesowen, West Midlands. The moth examined various plants in the locality, a timber fence and finally yours truly before flying off.

Lionel E. N. Smith (6915)

SERICULTURE IN ZAIRE

I refer to Cecilia Irvine's paper entitled *Silk from Hawthorn*, in which she mentions various experiments with Sericulture in Zaire. Surely a more suitable subject would be some of the Indian Saturniid silkmoths, and I would mention in particular *Samia cynthia ricini*, which feeds on Castor (*Ricinus communis*) which grows freely all over tropical Africa, rather than a North American species.

D. G. Sevastopulo (5562)

MORE CLOUDED YELLOWS

Since the publication of our extensive review of the great Clouded yellow invasion in the May *Bulletin*, a few more reports have come to hand and these are given below. We have also received a detailed analysis of its occurrence in Leicestershire by Don Hall-Smith and this will be published in the February issue next year. — Editor.

On the 29th July 1983, at Selsey, I saw about 15 Clouded yellows and collected ten ova which had been laid on Red clover. These were white at first but turned orange after a couple of days, and hatched in eight days. I fed the larvae on clover at first and then changed to lucerne. They grew to about 45 mm in length and nine of them survived to pupate. From these three males emerged followed by six females. These I kept in a cage planted with lucerne and clover but no ova were obtained. The adults lived for eight to twelve days.

On my way home from Selsey, on 2nd July, I again saw a Clouded yellow flying across the road near Petsworth and a further three at Kings Park wood, where I also saw three Purple emperors, White admirals, Wood whites and a Silver-washed fritillary.

I saw further Clouded yellows at Biggin Hill and West Wickam on 14th August and 18th August respectively and another at Addington on 20th August.

On 21st August, two males and three females again at Biggin Hill. Finally back at Selsey a var *helice* was spotted towards the end of August.

Christopher Jupp (7802J)

Your May account of Clouded yellows contained no sitings from Northamptonshire, and, as a recently-joined member of the AES, I did not see your earlier appeal. The following are therefore of interest.

At Rockingham forest on August 14th, 1983, I saw three males and a female. On August 29th along a nearby railway line to the forest, eight males. I also saw a male on the Northants/Bucks border on August 27th. All these specimens were very fresh. I also heard of other sightings in the county, including one from the centre of Northampton in late October, but did not see any of these myself.

Away from Northants I saw a female near Swanage on June 7th and another with about 20 males on the 10th. I took the two females and these produced some 400-450 ova which I reared through on birdsfoot trefoil and quite a few var *helice* made their appearance.

Peter Tebbutt (7941)

While on the Isle of Wight this year (1984) I saw a male Clouded yellow in a park at Newport on July 11.

Christopher Jupp (7802J)

In addition to your records in the May Bulletin, I have the following Clouded yellow notes from Somerset.

Many noticed when parish visiting around Shepton Mallet from Sunday, August 14th. Sighted nearly every day for about three weeks. Given some ova by a kind parishioner, the first of which emerged as adults on October 5th, our Harvest Festival! I was about to release the first male in the wild and was startled when my children spotted another one flying in the same field which had, presumably, survived the very wet September as a larva and the adult was flying on a rather dull October Sunday!

Rev. J. S. Woolmer (7193)

On the 5th August 1984, over the waste ground of a disused rubbish dump, at Prestatyn, Clydd, I observed about a dozen Clouded yellows and caught two males and a female. No examples of var *helice* were seen.

P. D. Bone (7536)

A SURFEIT OF STAG BEETLES

In the middle of June this year our local paper (*The Leatherhead Advertiser*) reported that one evening hundreds of Stag beetles (*Leucanus cervus* L.) flew over gardens and were watched by amazed householders. A Mr Jeremy Davies, of Linden Road, reported: "The air was alive with them. People who went out had to duck. I think they must just have hatched out and they seemed to come from a hedge. It was an incredible sight."

I myself, some four years ago, in June/July, one warm evening, found about 55 dead or dying Stag beetles in the garden and under close inspection I found that they all had their abdomens removed. I was then, and still am, very puzzled. I would be interested if someone could let me know the reason for this. Had they been eaten by some bird or other animal?

Richard Bizely (7143)

(I too, many years ago, have seen such a swarm passing overhead, also near to Leatherhead. As to the eaten abdomens, I suspect a rodent. I have known field mice help themselves to the abdomens of butterflies before now and leave the rest of the insect intact.—Editor.)

NOTES ON SATURNIIDAE — II

Columbian Robin moth on sumac

Early in the summer of 1983 I received a letter from the USA which contained a dozen ova of *Hyalophora columbia* Smith. This was a surprise as I had not expected them. Now all the textbooks say "This species will only feed on larch (*Larix lariciata*)" and at the time I had no access to this pabulum. I was not very happy and expected the larvae to meet with a quick ending to their short lives. Anyway the ova quickly hatched and I placed the larvae in the usual small plastic box. I decided the only thing to do was to try a few 'odds and ends' from the garden. These included such things as oak, rose, pussy willow and sumac.

I was very surprised the following morning to find that the larvae had been nibbling at the sumac and after a short wait it was quite certain that this was what they were eating. They all settled happily on the sumac, eating at a great speed and from then on they grew and grew until there was not much left of the sumac tree in my garden. After the early stages they were kept in a mainly glass cage about 18 inches square and had all spun up by the end of July. Only one was lost during a skin change.

So it seems that sumac is a really good substitute for larch in this species and I am sure rather more easy to come by, unless you happen to live in an area where it is common.

Wesley Caswell (3133)

BROWN ARGUS IN WALES

On the North Wales coast 1983 was a good year for butterflies and I discovered a colony of the Brown argus (*Aricia agestis*). According to Higgins and Riley's *Butterflies of Britain and Europe* these butterflies only occur in the South of England. I would be interested to hear of other records from North Wales.

P. D. Bone (7536)

(Editorial note: Higgins and Riley is too generalised a book to give accurate and detailed distribution. According to the more informative South *Butterflies of the British Isles, agestis* has indeed a Welsh distribution.)

VESTAL AT SELSEY

On September 30 1983 I took a specimen of the Vestal moth (*Rhodometra sacraria* L.) at Selsey.

Christopher Jupp (7802J)

WHITELETTER HAIRSTREAK IN DIDSBURY

On Thursday July 11 1983 I saw a fresh specimen of the Whiteletter hairstreak (*Strymonidia w-album* Koch) resting on a wall in Didsbury, Manchester. The afternoon was dull and windy and I was able to pick up the butterfly with my fingers and return it after inspection. I believe this butterfly to be a very unusual visitor this far north and I have never seen any hairstreaks in this area. The locality was especially unusual for being in a suburban rather than a woodland area.

M. Fisher (5299)

(See article on page 199 in this issue on effort of Dutch elm disease on butterflies and this species in particular. — Editor.)

A GERMAN LEPIDOPTERA LIST

We have had published in the Bulletin many accounts of the lepidoptera (mainly butterflies) from the Southern half of Europe, but we have had nothing from the centre and north. It was therefore with great interest that we received the 3rd Supplementary number of the *Nachrichten des entomologischen Vereins Apollo*. This is an 83 page list of the Macrolepidoptera to be found in a 1200 sq km area centred around Hanau and is by Martin Schroth. While 640 species are to be found in this area it is very alarming to learn that a very high percentage (13.4%) are on the German Red Data book list of endangered species and this fact is highlighted in the list. The greatest cause for concern is clearly for the butterflies, for, of the 64 species found in the area, no less than 27 (42%) are at risk and as usual this includes the more spectacular and beautiful such as the Swallowtail and Purple Emperor. For anyone intending an entomological trip to Germany this list provides very useful information and is also of interest to those studying both distribution and conservation. (Editor.)

HUMMINGBIRD HAWKMOTH IN KENT

On August 14th last year at 11 am, in my garden at West Wickam, I saw a Hummingbird hawkmoth (*Macroglossum stellatarum* L.) hovering in front of and feeding on some honeysuckle. It fed for 2-3 minutes but flew off when I tried to capture it. In about ten minutes it (or another one?) returned to the honeysuckle but once again eluded being caught.

Christopher Jupp (7802J)

BUTTERFLIES SUFFERING FROM DUTCH ELM DISEASE

It is estimated that about half of Britain's 60 or so resident butterfly species are declining in numbers, with some now in danger of extinction. One species thought to be in decline is the White-letter Hairstreak. This attractive butterfly relies strongly on elm trees for its survival, so Dutch Elm Disease, which has already killed some 20 million trees in this country, may also be contributing to a decline in the population of this butterfly in the Midland counties.

Surveys undertaken between 1970 and 1982 indicated that at least one White-letter Hairstreak colony could be found in each of the counties of the West Midlands and Central Wales (with the possible exception of West Midlands itself). However, many of these colonies have declined in numbers, with the result that this butterfly may now have totally disappeared from some areas.

World Wildlife Fund is working to evaluate the extent to which Dutch Elm Disease has damaged White-letter Hairstreak populations and to save existing colonies. Motorists in the Midlands can help too, by supporting the British Butterfly Appeal.

This national Appeal is being sponsored by Associated Tyre Specialists, who are hoping to raise £40,000 for the World Wildlife Fund. Anyone who owns a car, lorry or motorcycle can help, because for every tyre, battery or exhaust purchased from an ATS depot during 1984, the company is making a donation to help protect Britain's butterflies.

Wendy Craig, star of "Butterflies", the BBC television series, says: "Butterflies are special to me, and I'm supporting the World Wildlife Fund's Appeal to save Britain's butterflies. Our gardens and countryside just wouldn't be the same without them, and it would be a sad loss if some of our species disappeared for ever. Butterflies will not survive if they are left to fight alone, and that is why I'm asking everyone to help WWFand ATS to protect them."

The White-letter Hairstreak is a very beautiful butterfly. The upper side of the wings are brown, while the underside is brown with orange markings, and a thin white "W" (from which the butterfly derives its name). The butterfly can be seen on the wing at this time of year (July to August), when it lays its button-shaped eggs on the underside of wych elm twigs. The species hibernates as an egg for some seven months, and the newly-hatched caterpillars emerge towards the end of February.

The lifestyle of the White-letter Hairstreak is something of a mystery, for this butterfly is seldom seen. It flies very little, preferring to rest high up on the foliage of elms, only occasionally venturing down to visit flowers such as bramble and privet — which means that the researcher will have to go up into the trees to find them!

World Wildlife Fund is working to establish the precise distribution of the butterfly colonies, to assess their numbers, and to learn as much as possible about their lifestyle and behaviour. It is extremely important to gauge the extent to which this lovely butterfly has suffered from the decrease in numbers of elm trees.

You can help the White-letter Hairstreak, by making a purchase from ATS, or you can send a donation to the "British Butterfly Appeal", at World Wildlife Fund, Panda House, 11-13 Ockford Road, Godalming, Surrey GU7 1QU. Anyone supporting the British Butterfly Appeal will receive a specially designed car sticker as a "thank you". For further information and a free butterfly poster, please write to the World Wildlife Fund with a SAE (12½ x 9″).

Information only may be obtained by phone enquiry to Brian Brockman-Smith on (04868) 20551, or Susan Dixon on 01-836 7642.

(The above is the substance of a news release issued by the sponsors of the British Butterfly Appeal, Messrs Associated Tyre Specialists Ltd. — Editor.)

THE ORDER STREPSIPTERA IN MALTA

The Strepsiptera are a small order of insects containing some 370 species (Kinzelbach, 1971) the majority of which are Holarctic. Members of this order are rather anomolous insects having larvae endoparasitic on other insects. Males are free living while in most species the females remain throughout their entire lives in a puparium which protrudes slightly from the host's body. Such parasitized insects are commonly termed 'stylopized' while the parasite itself is called a 'stylops'. Hosts includes members of the Homoptera Auchenorrhyncha and the Hymenoptera superfamilies Vespoidea, Sphecoidea and Apoidea.

Some authorities include the Strepsiptera within the Coleoptera and place them near the Meloidea and Riphoridae. Others consider the Strepsiptera as a separate order.

No previous records of Strepsiptera exist for the Maltese Islands (Central Mediterranean) and the specimen listed below therefore constitutes the first record of this order from this region.

Family: Mengenillidae
Mengenilla chobauti Hofender, 1910
Malta: Marsascala, 10.IX.1977, 1 male attracted to light; leg. A. Bezzina; specimen in author's collection; det. R. Kinzelbach 1984.

Mengenilla chobauti is a widespread species known from Spain to Greece in the Mediterranean area; the species in known also from North Africa (Kinzelbach, 1970; 1979).

Acknowledgements

The author is indebted to Dr Ragnar Kinzelbach of Darmstadt (West Germany) for kindly determining the species and for supplying information. Thanks is also due to Mr A. Bezzina for making available the species.

Stephen Schembri (5519)

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THE AES CROSSWORD

(Compiled by M. J. M. Smith (5794))

CLUES

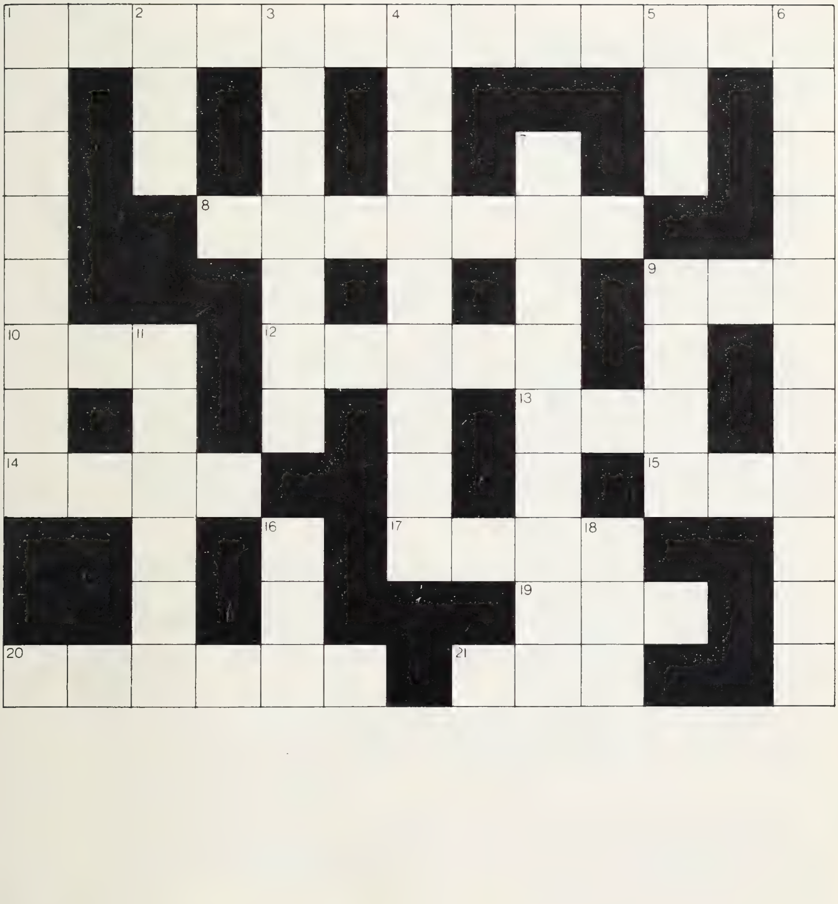
ACROSS

1 A Heathland dragonfly. Married perhaps? (13)
8 Something a modern entomologist should only resort to for a good reason. He may use HCN or $CC1_4$. (7)
9 A secretion of Coccids. (3)
10 Worker wasps don't usually produce these. (3)
12 Winged. (5)
13 Which area of Dytiscus marginalis is not black? (3)
14 Home of leather-jackets and chafer grubs. (4)
15 Where might insects with a specific adjective fraxini live? (3)
17 What type of habitat does a xerophile like? (4)
19 Do male wasps survive the winter or not? (3)
20 across and 3 down Lesser Carapace of a reptile (Lep.) (6, 7)
21 One of 10 across. (3)

DOWN

1 Lacewing genus. (8)
2 King of insect clubs? (3)
3 See 20 across.
4 Common damsel genus. (9)
5 Common Coccinellidae have seven, two or . . . ? (3)
6 Weevils. (11)
7 Red, yellow and copper. (9)
9 Small common flowertop longhorn beetle. (4)
11 At the end. (6)
16 A greek grey dagger. (3)
18 A host of Ctenocephalides canis. (3)

(Solution in next issue.)



A.E.S. SPECIALIST HANDBOOKS

Volume No.

7. **The Hymenopterist's Handbook.** Originally published in 1943, facsimile reprint 1969. This volume is a comprehensive guide to collecting, rearing and the study of ants, bees, wasps, sawflies, gall-wasps and parasitic Hymenoptera; including keys to all the British families. 160 pp., 183 figs., 2 plates. Price: £4.90

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JOHNSTON, G. P. (7993J)	2 Fairway Ave., Tilehurst, Reading, **Berks**	*(L. ent.)*
JOHNSTON, P. (7790)	c/o Amberville, Merlin Pk Road, Roscam, Galway, **Eire**	*(ent.)*
JONES, Mrs. J. M. (7936)	10 Alliance Way, Paddock Wood, Tonbridge, **Kent** TN12 6TY	*(R. O. H.)*
JONES, S. P. (7728)	Dunromin, Chapel Hill, B rea, Camborne, **Cornwall** TR14 9AZ	*(O. L. C.)*
JUPP, C. (7802J)	125 Birch Tree Ave., West Wickham, **Kent**	*(L.)*
KAVANAGH, J. M. (7966)	2 Charlotte Street, Newbridge, Co. Kildare, **Eire**	*(L.)*
KEEGAN, G. J. (7988)	Hurstfields, Allington Road, Newick, Lewes, **Sussex** BN8 4NAx	*(L. ent.)*
KEEP, M. A. (7730)	10 Chilvers Bank, Baldock, **Herts** SG7 6HR	*(Phas. Mant.)*
KENT, L. G. (7834)	162 Primrose Avenue, Haslington, Crewe, **Cheshire** CW1 1QP	*(R.)*
KEYWOOD, B. M. (7992)	34 Carnoustire, Larwood, Worksop, **Notts** S81 0DB	*(L.)*
KIRK, Mrs. J. (7810)	Mill End, Dawber's Lane, Euxton, Chorley, **Lancs** PR7 6EB	*(L. ent.)*
KONSTANTY, J. C. (7982)	4 Hawkins Close, Shoreham-by-Sea, **W. Sussex** BN4 6TL	*(R.)*
LANEY, T. J. (7899)	5 South Close, Long Buckby, **Northants** NN6 7PX	*(L.)*
LANGFORD, I. K. (7986)	Dept. F & N. R., Darwin Building, Edinburgh University, **Edinburgh**	*(Par. L.)*
LARGE, A. N. (7977)	2 Clifton Close, Swadlincote, Burton-on-Trent, **Staffs** DE11 9SO	*(L. O.)*
LE CORRE, F. (7754)	36 Rue de la Rotonde, 13001, Marseille, **Frances**	*(Phas. L. C.)*
Lees, D. C. (4986)	74 Woodcrest Road, Purley, **Surrey** CR2 4JB	*(L.)*
LISECKI, A. (7755)	25 Queen Street, Bedford, **Beds** MK40 2HS	*(L.)*
LIVERMAN, P. G. (7764)	Oakengate, Court Wick Lane, Littlehampton, **W. Sussex** BN17 7PD	*(Ar. D. H. C.)*
LOCK, C. (7969)	27 Dover Road, Walmer, Deal, **Kent** CJ14 7HR	*(R.)*
LOWE, M. A. (7780J)	8 Victor Close, St. Ives, **Cambs** PE17 4UY	*(L.)*
LUDLOW, T. S. (7884)	30 Marmion Road, Coningsby, **Lincs** LN4 4RG	*(L.)*
McCLENAGHAN, Dr. I. (2499)	20 St. Nicholas Grove, Ingrave, Brentwood, **Essex**	*(L.)*
McGRATH, K. J. (7733)	30 Beddington Road, St. Paul's Cray, Orpington, **Kent** BR5 2TG	*(L. fw, Phas.)*
McGRATH, P. E. (7882)	c/o 23 Havelock Street, Glasgow, **Scotland** G12	*(C. pests.)*
MACKINTOSH, R. E. C. (7908)	18 Allington Road, Newick, Nr. Lewes, **E. Sussex** BN8 4NA	*(L. Cons.)*
MACEY, A. G. (7786)	41 Coupe Lane, Holmgate, Clay Cross, Nr. Chesterfield, **Derby** S45 9QL	*(L.)*
MACK, R. J. (7956)	19c Kyle Road, Kildrum, Cumbernauld, **Scotland** G67 2DY	*(R.)*
MARKS, Miss A. J. (6564J)	36, Charnhill Drive, Mangotsfield, **Bristol** BS17 3JR	*(Phas. Sat.)*
MARLEY, S. (8003)	220 St. Nicholas Drive, Grimsby, **S. Humberside** DN37 9RP	*(L. breed)*
MARTIN, C. W. (7962)	Sheri, Mill Lane, Felbridge, E. Grinstead, **E. Sussex** RH19 2PE	*(H. L.)*
MARTIN, R. L. (5392)	39 Burnside Avenue, Skipton, **N. Yorks**	*(ent.)*
MARTIN, Ms. S. (7809)	224 Wendover, Aylesbury Estate, Welworth, **London** SE17	*(L. H.)*
MASON, J. (7878)	6 Kendrick's Bank, Bayston Hill, Shrewsbury, **Shropshire** SY3 0EH	*(L. Orth. O. P.)*
MASON, T. A. (7848J)	The Old Rectory, Church Lane, Norton, Bury St Edmunds, **Suffolk** IP31 3NB	*(Phas. Mant.)*
MEDLOCK, R. D. (7987)	3 The Close, Fairmead Mews, Saltash, **Cornwall**	*(ent.)*
MERCER, A. S. (7897)	51 Harries Road, Tunbridge Wells, **Kent** TN2 3TW	*(L. C. H. ent.)*
MILBOURN, P. A. (7923J)	30 High Catton Road, Stamford Bridge, **Yorks** YO4 1OU	*(fw. ent.)*
MITCHELL, P. (7904)	2 Bungalow, Pardhouse Lane, Stanford Bridge, **Worcs**	*(L.)*
MOLLAND, (7984J)	Forge Stores, Throwleigh, **Devon** EX20 2HS	*(Formic.)*
MORTON, Dr. A. D. (7765)	Increase Miler Road, Katonak, **NY 10536** USA	*(exot. L.)*
MOUSLEY, H. J. (7849)	18 King Richards Hill, Whitwick, Coalville, **Leics.**	*(C. Hem. L. H. Orth.)*
MURRAY, A. J. (7877)	Shakespeare Road, Herne Hill, **London** SE24 0QD	*(L.)*
NALDRETT, Mrs. M. (7970)	40 Cranberry Lane, Alsager, **Staffs**	*(L.)*
NAUMANN, S. U. (7964)	Im Pfarrgarten 5, 8525 Uttenreuth, **West Germany**	*(Sat. Sphing. breed)*

NEVARD, S. M. (7946)	18 The Dewpond, South Cliff Park, Peacehaven, **E. Sussex** BN9 8EE	*(L.)*
NEWCOME, J. C. (7766)	623 Gale Street, Dagenham **Essex**	*(L. O. Orth.)*
NEWLAND, M. (7883)	41 Northfield Road, Cobham, **Surrey**	*(Ar.)*
NICHOLLS, Dr. S. P. (7871)	8 Fairacre Close, Purdown, Lockleaze, Bristol, **Avon** BS7 9TW	*(fw. Orth.)*
NORTHFIELD, C. J. (7791J)	9 Lysander Close, St. Ives, **Cambs**	*(L.)*
NURSE, R. W. (7796)	20 Grove Road, Whetstone, **Leicester** LE8 3LN	*(L.C.)*
ODDY, C. J. Mrs. (7761)	69 North Street, Southminster, **Essex** CH0 7DG	*(L.)*
O'DELL, A. P. (7863J)	35 Normandy Avenue, High Barnet, **Herts** EN5 2HX	*(L.)*
O'DELL, J. B. (7808)	46 Cavendish Road, St. Albans, **Herts** AL1 5EE	*(R. Lycaenidae.)*
OLLEY, S. W. (7905J)	14 Netley Dell, Letchworth, **Herts** SG6 2TF	*(L.)*
PARFITT, R. W. (7943)	29 Manor Road, Farnborough, **Hants** GU14 7EX	*(L. C. ent.)*
PARKER, A. (7992)	Church Grove Cotts., Chapel Hill, Tintern, **Gwent** NP6 6TD	*(H. D.C.)*
PARSONS, D. (7879)	Baas Manor Farm, Broxbourne, **Herts**	*(R. Cons.)*
PARTRIDGE, L. W. (7815J)	22 Victoria Street, Alderney, **C. Isles**	*(all orders.)*
PASTON, S. (7906)	152 Christchurch Road, Norwich, **Norfolk** NR2 3PQ	*(L. bot. dons.)*
PAYNE, N. T. (7742)	Thurlands, The Haven, Billingshurst, **W. Sussex** RH14 9TY	*(L.)*
PEATFIELD, Rev. P. (7974)	222 High Street, Hornchurch, **Essex** RM12 6QP	*(L. P. breed.)*
PENDLETON, T. A. (6366)	21 Gretton Road, Mapperley, **Nottingham** NG3 5JT	*(L. H.)*
PENKETH, P. G. (7835)	Emmanuel College, **Cambridge**	*(ent.)*
PETERSON, M. (7930)	25 Yardeley, Lee Chapel North, Basildon, **Essex**	*(C.O.)*
PETRIE, A. B. (7850)	14 Florence Avenue, Morden, **Surrey** SM4 6EX	*(L. O.)*
PETRIE, D. (7912)	32 Deveron Street, Huntly, **Aberdeenshire** AB5 5BY	*(ent.)*
PHILLIPS, K. (7864)	218 Staines Road West, Sunbury-on-Thames**Middlesex**	*(ent.)*
PONSONBY, D. J. (7821)	3 Towfield Cotts, North Road, South Ockendon, **Essex** RM15 6SP	*(P. ent.)*
PORTER, Miss C. M. (7938J)	4 Byron Road, Stratford-upon-Avon, **Warks**	*(L.)*
PEGNALL, D. E. (7752)	56 Dragon Avenue, Harrogate, **N. Yorks** HG1 5DT	*(L. Mant. ent.)*
PERSHAD, Mrs. P. (7942)	Poldrait Insect Zoo, 7 James St, Bridgeton, **Glasgow** G40	*(ent.)*
POTTER, Miss B. G. (7836)	53 Paddock Road, Neasden, **London** NW2 7DH	*(L. Orth. Hem.)*
POULTER, Miss H. (7735)	3 Enmore Avenue, S. Norwood, **London** SE25	*(L., C., Phas.)*
POULTER, W. B. N. (7767)	Quinces, Cranmore Avenue, Yarmouth, **Isle of Wight** PO41 0XS	*(L.)*
POWELL, E. J. (7799)	4 Nursery Path, Hailsham, **E. Sussex** BN27 3HH	*(R.)*
RAMSDALE, R. H. (7792)	8 Harcourt Road, Bracknell, **Berks** RG12 4JD	*(L. ent. Ml. P.)*
RAYNOR, E. M. (7801)	Priors Mead, Nash Meadow, Sth. Warnborough, Basingstoke, **Hants**	*(L. H. ent.)*
REDMAN, N. H. (3903)	13 Craig Mount, Radlett, **Herts**	*(L.)*
REED, J. M. (7844)	84 Oakland Avenue, **York** YO3 0DF	*(ent. R.)*
REY, D. (7920J)	22 Southfield Road, Tuffley, **Gloucestershire** GL4 9UD	*(L.)*
REYNOLDS, S. P. (7952)	18F, Goldsbrough Court, Richardson Rd, Newcastle, **Tyne & Wear** NE2 4BQ	*(L.)*
RICHARDSON, S. C. (7729)	148 Pebsham Lane, Bexhill, **E. Sussex** TN40 2RY	*(cons. e. L.)*
RICHMAN, T. J. (7934)	15 Broad Lane, Hale, Altrincham, **Cheshire** WA15 0DE	*(L. cons. ent.)*
ROPER, C. J. (8008J)	150 Packer Avenue, Leicester Forest East, **Leicester** LE3 3QJ	*(L.)*
RUSSELL, A. P. (7913)	15 St. Swithin's Road, **Leicester** LE5 2GE	*(L. C. O.)*
RUSSELL, Mrs J. F. (8006)	Quarry Cottage, Lee, Ilfracombe, **Devon** EX34 8LR	*(L. H.)*
SALTWELL, Miss C. M. (7894)	33 Rudsdale Way, Colchester, **Essex** CO3 4LB	*(C. Stored fd. ent.)*
SEWELL, J. D. (7749)	1 Wimborne Close, Wigston Magna, **Leicestershire** LE8 2JG	*(L.)*
SHAW, C. M. (7921J)	63 Friar Road, Orpington, **Kent** BR5 2BW	*(L.)*
SHERIFF, R. (7737)	154 Uxbridge Road, Hatch End, Pinner, **Middlesex**	*(L.)*
SIMONS, I. (7939)	70 Craven Gardens, Barkingside, Ilford, **Essex**	*(L.)*
SKINNER, H. (3416)	Calle Candelaria Sur No. 36, La Victoria Edo, Aragua, **Venezuela**	*(L.)*
SLADE, Miss H. M. (7803)	Fairview, Steway Lane, Northend, Batheaston, Bath, **Avon**	*(C.)*
SLY, K. J. (7865)	106 Meadfoot Road, Willenhall, Coventry, **W. Midlands** CV3 3DT	*(ent.)*
SMITH, A. M. (8004)	89 Ermine Road, Ladywell, **London** SE13 5JJ	*(Ar. C. Millipedes)*
SMITH, B. (7925)	The Old Vicarage, Mitton, Nr Whalley, Blackburn, **Lancs**	*(R. Lycaenidae)*
SMITH, Mrs F. J. (7985)	157 Pilling Lane, Chorley, **Lancs** PR7 3EF	*(L.)*
SMITH, N. A. (7866)	14 Becketts Avenue, St. Albans, **Herts**	*(L. D. C.)*

SMITH, T. J. N. (7837J)	5 Long Brandocks, Writtle, Chelmsford, **Essex** CM1 3DT	*(Phas.)*
SPARKS, S. F. (7818)	Avondale, Bow, Nr. Crediton, **Devon** EX17 6EZ	*(Ar. ent.)*
SPRATT, D. A. (7740J)	204 Uplands Road, West Moors, Wimborne, **Dorset** BH22 0EY	*(Fw. Het.)*
SPREADBURY, J. E. (7996)	66 Fir Tree Walk, Reigate, **Surrey** RH2 0RU	*(L. Anisopt.)*
STEVENS, G. J. (7945)	16 Ashbrook Road, St. Leonards-on-Sea, **E. Sussex** TN37 7EH	*(L. breed)*
STILL, Miss K. (7741J)	37 Main Street, Foxton, Market Harborough, **Leics**	*(breed R.)*
STOCKER, D. (7940)	7 Deverton Walk, Corby, **Northants** NN17 2JX	*(ent.)*
STUART, D. M. (7738)	Woodlands, Sandleheath, Fordingbridge, **Hants** SP6 1PA	*(L.)*
STUBBS, A. E. (6481)	4 South Hill Grove, Harrow, **Middlesex** HA1 3PR	*(Cons. D.)*
STURROCK, J. L. (7902J)	546 Clarkston Road, Netherlee, **Glasgow** G44 3RT	*(Sat.)*
SUTTON, M. (7793)	2 Marle Place Cottage, Brenchley, Tonbridge, **Kent**	*(Hr.)*
SUTTON, Miss S. (7867)	5 Mill Road, Angmering, **Sussex** BN16 4HP	*(L.)*
TAYLOR, C. P. (7983)	30 Roseberry Creso., Jesmond, Newcastle-upon-Tyne **Tyne & Wear** NE2 1EU	*(L.)*
TAYLOR, D. A. (7839)	71 Johnson Road, Birstall, **Leicester**	*(fw.)*
TEBBUTT, P. (7941)	112 Broadway East, Abington, **Northampton** NN3 2PR	*(R.)*
TENNENT, W. J. (7756)	HQ Provost Marshall, Empress State Build., Lillie Road, **London** SW6 1TR	*(L.)*
THOMAS, A. T. (4683)	1 Abrams Lane, Heydon Road, Chrishall, Royston, **Herts** SG8 0QD	*(L. ent.)*
TILLER, Miss S. A. (7845)	Chaldon Cottage, Druidston, Haverfordwest, **Dyfed**	*(Hem. L.)*
TOLHURST, P. J. (7918)	35 Rodborough Avenue, Stroud, **Gloucestershire** GL5 3RR	*(P. R.)*
TOUSSAINT, N. (7819)	Dept. of Zoology, Univ. of Edinburgh, West Mains St., **Edinburgh**	*(L.)*
TOWNSEND, C. (7806)	54 Granby Grove, Highfield, Southampton, **Hants**	*(L. D.)*
TOWNSEND, E. F. (7807)	Cedar Cottage, Furners Lane, Henfield, **Sussex** BN5 9HS	*(L.)*
TRAVERS, J. A. (7797)	36 Park Street, Deal, **Kent**	*(L. ent.)*
TREADWELL, Mrs. H. R. (7967)	52 Elmfield Road, Davenport, Stockport, **Cheshire** SK3 8SE	*(R.)*
TROW, P. L. (7960)	Preswylfa, off Meadow St., Ogmore Vale, Bridgend, **Mid Glamorgan**	*(O. Orth. P.)*
TUCKER, P. (8009)	48 Mitchell Road, St. Austell, **Cornwall** PL25 3AX	*(O.)*
TURNER, A. R. (7763)	48 Stace Way, Worth, Crawley, **W. Sussex** RH4 4YP	*(L.)*
TYRES, M. (7979)	54 Bassett Street, S. Wigston, **Leicestershire** LE8 2PE	*(O. L. C.)*
UNDERWOOD, S. (7778)	PO Box 330, Lane Cove, New South Wales, 2066, **Australia**	*(C. L.)*
VAN DE KERKHOVE, S. (7949J)	12 Kipling Place, Eaton Ford, St. Neots, **Hunts** PE19 3RG	*(L. exot.)*
VALLORY, Dr. J. F. (7804)	12, 1 er 2 ona, Carrer del Nord, Lleida, **Spain**	*(ent.)*
VARDY, R. J. (7872)	143 Elm Walk, **London** SW20 9EF	*(L.)*
VARLEY, T. A. (7926)	67 Cumberland Street, Edinburgh, **Scotland** EH3 6RD	*(D. Syrph. bot.)*
WALDES, Dr. R. M. (7783)	96 Church Road, Hanwell, **London** W7 3BE	*(C. Mant.)*
WALKER, J. A. (7975J)	3 The Parkway, Bassett, Southampton **Hants** SO2 3NZ	*(H. C.)*
WALKER, P. N. (7927)	6 Church Street, Reepham, Norwich **Norfolk**	*(L. Sat.)*
WARREN, D. F. (7759)	28 Aldrich Avenue, Tile Hill North, Coventry, **W. Midlands**	*(L.)*
WATTS, H. (7798)	117 Surbiton Hill Park, Surbiton, **Surrey**	*(Sphing. R.)*
WATTS, P. A. (7798)	33 Park Street, Deal, **Kent**	*(L. ent.)*
WATTS, R. (7875)	Honeymead, Back Lane, Kingston, Seymour, Clevedon, **Avon**	*(R.)*
WEBSTER, C. S. (7901)	25 Clifton House Road, Clifton, Swinton **Manchester**	*(L. exot.)*
WEST, A. P. (7800)	31 Cornwall Road, Shotton, Clwyd **Wales** CH5 1NN	*(formic. ent.)*
WHARTON, B. (7892)	7 Chirnside, Cramlington, **Northumberland** NE23 6LQ	*(L. Ar. O. H.)*
WHITE, Mrs. S. (7785)	Briff, Briff Lane, Upper Bucklebury, Reading, **Berks**	*(Sat. Hr.)*
WHITEHEAD, H. (7760)	10 Stainton Road, Catford, **London** SE6	*(L.)*
WILKINS, P. L. (7944)	23 Haviland Park, Weston, Bath **Avon**	*(L. Hr.)*
WILLIAMS, R. (7955)	Kyntons Mead, Heath House, Wedmore, **Somerset**	*(ent. P.)*
WILLS, M. (7774)	114 North Downs Road, New Addington, Croydon, **Surrey** CR0 0LD	*(L. Sping.)*
WINFIELD, K. W. (7961)	26 Richmond Drive, Skegness, **Lincs** PE25 3PQ	*(ent.)*
WINTERFLOOD, A. F. (7739)	129 Newhouse Crescent, Garston, **Herts**	*(L. C.)*
WOLSTENHOLME, P. D. (7953)	38 Williams Road, Burnley, **Lancs** BB12 3DA	*(L. H.)*
WOODCOCK, B. A. (7876)	Orchard Cottage, Portsmouth Road, Milford, **Surrey** GU8 5DR	*(Phas.)*
WOODWARD, Miss J. C. (7886)	21b Erskine Road, Walthamstow, **London** E17 7RY	*(L. D. breed)*

WOOLLASTON, P. J. (7824)	16 Pool Furlong, Clent, Stourbridge, **W. Midlands** DY9 9RE	*(L.)*
WORTON, D. J. (7887)	Bodgara House, Shutta Road, East Looe, **Cornwall**	*(L.)*
WRAIGE, Miss E. (6474)	75 Marlborough Crescent, Sevenoaks, **Kent** TN13	*(Phas. L. Orth. C.)*
YOUNG, C. (5045)	65 Dudly Lane, Madison Ct, **06443** U.S.A.	*(D.)*

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ALDRIDGE, Dr. M. C., MB. (4351)	19 West Mead, Welwyn Garden City, **Herts.**	*(L. D.)*
ANDREWS, M. (7692)	11 Oakham Close, Toothill, Swindon, **Wilts.**	*(R.)*
AYRES, W.A. (6939)	25 The Ferns, Ferndale Rd., Swindon, **Wilts** SN 2 1HP	*(ent.)*
BAKER, M. J. (7200)	Amberwood, High St., Ludgershall, Aylesbury, **Bucks,** HP18 9PD	*(L.)*
BAKER T. (4659)	63 Grove Road, Rayleigh, **Essex**	*(L.)*
BALES, C. R. (6774)	3 St. Catherine's Way, Gorleston, Gt. Yarmouth, **Norfolk** NR31 7QB	*(L.)*
BARKSDALE, C. M. (4511)	Apt. 102,5335 Brody Drive, Madison, Wisconsin 5375, **U.S.A.**	*(L.)*
BAXTER, B. D. (6009)	6 Bramdene Ave., Weddington, Nuneaton, **Warks** CV10 0DF	*(L. C.)*
BAXTER, L. N. (1664)	45 Chudleigh Crescent, Ilford, **Essex** IG3 9AT	*(L. ent.)*
BEAGLES, D. J. (4790)	17 Sherborne Rd., Springfield, Chelmsford, **Essex** CM1 5NU	*(L.)*
BELLAMY, T. M. (7595)	Falcon House, 14 Arthurs Gate, Montgomery, **Powys** SY15 6QU	*(L.O.)*
BETTS, C. R. (4976)	2 Waverley Ave., Exeter, **Devon** EX4 4NL	*(H. C. O.)*
BINDON, C. R. (7330)	46 Lennard Rd., Dunton Green, Sevenoaks, **Kent** TN13 2UX	*(H. Het. Orth.)*
BONS, P. D. (7536)	28 Pendre Ave., Prestatyn, **Clwyd** LL19 9SL	*(L. D. H. C.)*
BORTHWICK-CLARKE, R. (7283)	Mystic Meadows, Hanging Langford, Salisbury, **Wilts** SP3 4NW	*(L.)*
BRAY, C. J. (7105)	56 Shakespeare Road, Bexley Heath, **Kent**	*(R.)*
BRIGGS, A. M. (6396)	8 Stratfield, Bracknell, **Berks** RG12 4WT	*(L. Sat.)*
BROOKER, R. C. (5776)	Camilla Cottage, 1 Mere Park, Mere, Warminster, **Wilts.**	*(L.)*
BURGESS, P. R. (7466)	Riverbeach House, Ivy Lane, Teignmouth, **S. Devon**	*(L. fw. P.)*
BUXTON, R. D. (7655)	6 Hillside, Little Wittenham, Abingdon, **Oxon** OX14 4QX	*(ent.)*
BYRNE, J. T. (6518)	58 North Road, Horndean, **Hants.**	*(L. breed)*
CADERA, J. G. (5987)	14 Trothy Road Road, Bermondsey, **London** SE1	*(L.)*
CARTER, T. (6178)	17 Hessle Drive, Boston, **Lincs**	*(L.)*
CATANIA, A. (7680J)	30/1 Gianni Bencinia Str., Gzira, **Malta**	*(L.)*
CHAMBERS, D. A. (6228)	15 Briar Close, Larkfield, Maidstone, **Kent** ME20 6NA	*(L.)*
COLLIER, M. (7707)	67 Church Lane, Homerfield, Harleston, **Suffolk**	*(C.L.)*
CONNOLLY, J. (7348)	12 Northumberland Road, Linford, **Essex** SS17 0PT	*(Phas.ent.)*
COOPER, C. (6149)	78 Wimbush End, Basildon, **Essex**	*(L. Sphing.)*
COOTER, J. (3290)	222 Whittern Way, Tupsley, **Hereford** HR1 1QP	*(C. ent.)*
COPESTAKE, S. (7344J)	22 Meadow View, Banbury, **Oxon** OX16 9SR	*(C. D.)*
CROME, D. A., B.Sc. (6896)	4 Hurrel Down, Boreham, Chelmsford, **Essex**	*(L.)*
CROSS, P. A. (7430)	3 Meadow Road, Burpham, Guildford, **Surrey**	*(L. O.)*
CROSSLAND, D. P. (7647)	126 Reynolds Drive, Edgware, **Middlesex** HA8 5PY	*(Sat. Sphing.)*
DAEMS, J. (5850)	61 Braemar Road, Plaistow, **London** E13 8EH	*(Der.)*
DAVIES, A. M. (6201)	24 Cromwell Avenue, Bromley, **Kent** BR2 9AQ	*(Sphing L.)*
DELF, J. H. (4552)	Windy Ridge, Church Rd., Hartley, Dartford, **Kent** DA3 8DY	*(L. Orth.)*
DERRY, N. J. (4317)	71 Bartholomew Close, **London,** SW18 1JG	*(ent.)*
DOLDING, D. (7395)	c/o 12 Kingfisher Close, Margate, **Kent**	*(L.)*
DONALD, R. M. (5789)	65 Hendham Road, **London** SW17 7DQ	*(L. C. H.)*
EDMUNDS, R. D. (7017)	6 Fairless Drive, Saffron Walden, **Essex** CB10 2DR	*(ent.)*
EVANS, K. G. W. (5968)	173 Holtye Road, East Grinstead, **Sussex**	*(L.)*
EYRE, M. D. (5753)	Faculty of Agriculture, The University, Newcastle upon Tyne, **Tyne & Wear** NE1 7RU	*(L. C.)*
FRASER, J. R. B. (7579)	59 Dongola Rd., Bishopstown, Bristol, **Avon** BS7 9HW	*(L. ent.)*
FISHER, M. J. (5299)	4 Westholme Road, Didsbury, **Manchester** M20 9QY	*(L.)*
FOSTER, M. C. (6964)	8 Hoynors, Danbury, **Essex**	*(L.)*
FOSTER, S. (6943)	13 Oak Lodge Tye, Springfield, Chelmsford, **Essex** CM1 5GY	*(L.)*
GARDINER, C. J. (5249)	55 Lilac Ave., Wickford, **Essex**	*(C. L.)*
GARTHWAITE, D. G. (7417)	16 Brill Close, Luton, **Beds**LU2 9RL	*(Sat. Sphing. Mant. Phas. Ar.)*
GIBSON, H. W. (6445)	3 Talbot Close, Melksham, **Wilts** SN12 7JU	*(L.)*
GILLERY, A. J. (442)	40 Melwood Grove, Beckfield Lane, Acombe, **Yorks**	*(L.)*

GOODING, D. G. (4230)	14/34 Kensington Road, South Yarra, Victoria, **Australia**3141	(L.)
GOWER, R. J. (7553)	18 Castle Road, Isleworth, **Middlesex**	(L.)
GRATTAN, N. C. (6011)	6 Mohr Court, Nightingale Road, **London** N22	(L. C.)
GREEN, J. D. (4932)	11 Rock Gardens, Aldershot, **Hants**	(ent.)
GREGORY, W. J. (7304)	c/o 5 Heathfield Rd., Four Oaks Common, Sutton Coldfield, **W. Midlands**	(L.)
HARRINGTON, P. J. (6910)	5 Links View, Wallasey, **Merseyside** L45 0NQ	(L.)
HARRIS, P. J. (6111)	Westerleigh, Elkstone, Nr. Cheltenham, **Gloucester**	(Sat. Ar.)
HAWKINS, A. P. (6796J)	2 Westward Ho, 36 Streets Heath, West End, Chobham, **Surrey**	(L.)
HELLIWELL, D. J. (7545)	28 Hampton Road, Folly Hill, Farnham, **Surrey** GU9 0DL	(Hr.)
HENDERSON, J. V. (4719)	6 Babworth Crescent, Retford, **Notts** DN22 7NL	(L.)
HERON, J. C. (7614)	C/o Alpine Dept., Royal Botanic Gdns, Kew, Richmond, **Surrey**	(L. O. fw)
HOLDAWAY, P. J. (4267)	1 Burnt Hill Cotts., Plaistow Road, Dunsfold, Godalming, **Surrey**	(L. P. Cons.)
HOLMBERG, H. (5095)	Vainiopolku 7,00700, Helsinki 70,**Finland**	(L.)
HORTON, A. B. (5619)	Apple Cottage, Mouse Lane, Steyning, **W. Sussex**	(ent.)
HOUGH, M. (3354)	16 Frayslea, Uxbridge, **Middx** UB8 2AT	(ent.)
HOWES, J. V. C. (4874)	Rt. 4, Box 192D, Tarrell, Texas 75160, **U.S.A.**	(L.)
HUGHES, M. O. (3612)	1 Woodside Ave., Kinmel Bay, Rhyl, Clwyd, **Wales**LL18 5ND	(L. D.)
HYSLOP, E. J. (7281)	19 Grotto Lane, Tettenhall, Wolverhampton, **W. Midlands** WV6 9LP	(L. Sphing. breed.)
IRVINE, Mrs. C. (7080)	14 Spottiswoode St., Edinburgh, **Scotland** EH9 1ER	(Sat.)
JOYCE, A. A. (4672)	Manachie Lodge, Dallas Dhu, Altyre, Forres, **Morayshire**	(L.)
KIRBY, P. (7491)	55 Holcombe Street, **Derby**	(Hr.)
KITAMURA, M. (6399)	537-1 Magsugawa, Naha, Okinawa, **Japan**	(R.)
LANGFORD, G. (6099)	1 Normandy Drive, Berkhamsted, Herts HP4 1JW	(L. H. C.)
LONG, Rev. G. (4760)	65 The Avenue, Camberley, **Surrey** GU15 3NF	(L.)
LYDEN, J. A. (6574)	25 Church Sq., Basingstoke, **Hants** RG21 1SN	(L.)
MANVELL, R. L. (7261J)	12 Furnace Farm Rd., Furnace Green, Crawley, **W. Sussex** RH10 6QA	(L. C. Hr.)
MARCAN, Miss H. (3763)	5 Carnarvon Road, Reading, **Berks** RG1 5SB	(L.)
MARCHANT, M. E. (2598)	The Cottages, Main St., Cropwell Butler, **Notts** NG12 3AB	(L.)
MEAD, A. C. (6839)	2 Village Road, Finchley, **London**N3 1TL	(L.)
MEEK, J. A. (7317)	27 Northfield, Birchwood, Hatfield, **Herts**	(R. P. Cons. exot.)
MENDEL, H. (5515)	56 Carlford Close, Martlesham Heath, Ipswich, **Suffolk** IP5 7TB	(L. C.)
MERRITT, A. (7437)	33 Westmoreland Drive, Sutton, **Surrey** SM2 6AA	(L. O.)
MORRIS, P. J. (7120)	The Hawthorns, Talybont-on-Usk, Brecon, Powys, **Wales** LD3 7YQ	(L.)
MORRIS, R. (7558)	6 Maryland Close, Barwell, **Leics**	(L.)
OSBORN, M. R. (7191)	29 Chettle Road, New Parks Estate, **Leicester**	(L. breed.)
PAGE, M. G. P. (5219)	E.M.B. Lab., Postfach 10.2209,6900 Heidelberg, **W. Germany**	(L.)
PAYNE, R. G. (3856)	11 Cliff Avenue, Westcliff-on-Sea, **Essex**	(ent.)
PONTIN, E. D. (7352)	4 The Brambles, Girton, **Cambridge** CB3 0NY	(C. L.)
REAVEY, D. (6934)	St. Catherine's College, Oxford University, **Oxon** OX1 3UJ	(L. Orth.)
REYNOLDS, C. P. (5361)	26 Langholme Close, **Cambridge**	(L.)
ROBERTSON, D. H. (6116)	30 Hilfield Lane, Aldenam, Watford, **Herts** WD2 8AJ	(L.)
ROBINSON, G. (7669)	77 Edinburgh Drive, Rushall, Walsall, **W. Midlands** WS4 1HS	(O. L. C.)
ROY, R. (7220)	40 Fairbairn Rd., Peterlee, **Co. Durham**SR8 5EN	(fw., ent., mic.)
SACKETT, A. (3981)	Springbank, Birches Lane, Newent, **Gloucestershire**	(ent.)
SHEPPARD, D. A. (4205)	29 Colegrave Rd., Bloxham, Banbury, **Oxon** OX15 4NT	(L. H.)
SHORT, A. (5205)	364 Waterside, Chesham, **Bucks**	(L. H. Orth.)
SHUTT, A. (5183)	168 Edith Walk, Kelvin Flats, Sheffield, **Yorks** S6 3EF	(Sphing.)
SIMS, A. E. (6605)	4 Windsor Crescent, Heacham, **Norfolk**	(L.)
SMITH, N. P. (7582)	16 Bristol Rd., Kemptown, Brighton, **Sussex**BN2 1AP	(L. C.)
SOLOMON, D. R. (6126)	27 Little London Green, Oakley, Aylesbury, **Bucks** HP18 9QL	(L.)
STEELE, M. (7721J)	37 Gravel Lane. Wilmslow, **Cheshire**SK9 6LS	(Sphing.)
STEWART, J. D. (5875)	14 Painswick Road, Cheltenham, **Gloucestershire**	(L.)
STOKES, D. (7630)	97 St. James Park Road, Northampton, **Northants** NN5 5EU	(R. breed.)
SYDENHAM, W. I. J. (5016)	6 Tredegar Rd., Fishponds, Bristol, **Avon**BS16 4BS	(ent.)

TILLEY, R. J. D. (7513)	1 The Paddocks, Lower Penarth, Cardiff, **S. Wales**CF6 2BW	*(L. P. mic.)*
TRACEY, P. (6244J)	11 Wellington Avenue, Fleet, **Hants**	*(L.)*
TREBILCOCK, G. D. (2976)	June Cottage, The Dene, Hindon, Salisbury, **Wilts**	*(L.)*
TURNER, N. E. (5656)	Apt. 7, Grafton Court, Temple Grafton, **Warwickshire**	*(L.)*
VAN DEN ABBEELE, D. (7209)	Putsesteenweg 60, B-2820 Bonheiden, **Belgium**	*(R.)*
WALTERS, M. W. S. (6333)	Hillthorpe House, Wentbridge, Pontefract, **W. Yorks**	*(L. Sat.)*
WARDROPE, J. (2608)	59 Hospital Hill, Dunfermline, Fife, **Scotland**	*(L. C.)*
WATERS, R. W. (4141)	34 Clinton Ave., Welling, **Kent**	*(L. C.)*
WATERTON, P. (6096)	Bracken Hill, Belmangate, Guisborough, **Cleveland** TW14 7BB	*(L.)*
WEBB, D. W. (3000)	18 Gimble Way, Pembury, Tunbridge Wells, **Kent** TN2 4BX	*(L.)*
WHITBREAD, S. E. (4818)	Maispracherstrasse 51, Ch-4312 Magden, **Switzerland**	*(L.)*
WHITBREAD, R. W. (5337)	5 Oakhill Grove, Surbiton, **Surrey** KT6 6DS	*(L. C. O.)*
WILKINS, P. (7607J)	27 Storeton Rd., Oxton, Birkenhead, Wirral, **Merseyside**L43 5TN	*(C. H.)*
WILKINSON, P. G. (7457)	37 Greenlea Avenue, Yeadon, Leeds, **Yorks**	*(L. breed.)*
WILLIAMS, P. H. (4965)	Dept. of Applied Biology, **Cambridge**	*(H.)*
WISKIN, C. F. (7003)	54 Oak Lodge Ave., Chigwell, **Essex**	*(L.)*
WRIGHT, J. A. C. (7136)	Rm. 51, Furnival Hse., 50 Cholmeley Pk., Highgate, **London** N6 5EN	*(ent. behaviour)*
WINCHESTER, I. M. (5716)	58 Campden Hill Gate, Duchess of Bedford Walk, **London**W8	*(R.)*
YEH, M. J. P. (7351)	P.O. Box 470, Ipoh, **Malaysia**	*(L. ent.)*
YOUNG, C. A. (5236)	15874 Alexander, Livonia, Michigan 48154, **U.S.A.**	*(L.)*
ZATLOUKAL, R. G. FRES. (4400)	Flat 3, 83 Queens Gate, **London** SW7	*(ent.)*

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